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Graduate Programs

University
of Illinois
at Urbana-
Champaign

The policy of the University of Illinois is to comply fully with applicable federal and state nondiscrimination and equal opportunity laws, orders, and regulations. The University of Illinois will not discriminate in its programs and activities against any person because of race, color, national origin, ancestry, religion, age, sex, handicap, or status as a disabled veteran or veteran of the Vietnam era. This nondiscrimination policy applies to admissions, employment, treatment of individuals, and access to programs.

Vice-President Ronald W. Brady has been designated as the University equal opportunity officer. For additional information on the equal opportunity and affirmative action policies of the University, please contact: for the Urbana-Champaign campus, Michele M. Thompson, assistant chancellor and director of the Office of Academic Affirmative Action, 209 Coble Hall, Champaign, Illinois 61820, (217) 333-0574.

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1978-80 Programs

AT URBANA-CHAMPAIGN

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1978-80
Graduate Programs

UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

(217) 333-1000

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UNIVERSITY CALENDAR — URBANA-CHAMPAIGN CAMPUS

A Graduate College calendar giving important dates and deadlines for graduate students enrolled on campus may be obtained in 330 Administration Building.

First Semester 1978-79

Aug. 23, Wed.-Aug. 25, Fri.	Registration
Aug. 28, Mon.	Instruction begins
Sept. 4, Mon.	Labor Day (all-campus holiday)
Nov. 22, Wed., 5:00 p.m.-Nov. 26, Sun.	Thanksgiving vacation
Dec. 15, Fri.-Dec. 22, Fri.	Semester examinations

Second Semester 1978-79

Jan. 17, Wed.-Jan. 19, Fri.	Registration
Jan. 22, Mon.	Instruction begins
Mar. 17, Sat., 1:00 p.m.-Mar. 25, Sun.	Spring vacation
May 12, Sat.-May 19, Sat.	Semester examinations
May 20, Sun.	Commencement exercises

Summer Session 1979

June 11, Mon.-June 12, Tues.	Registration
June 13, Wed.	Instruction begins
July 4, Wed.	Independence Day (all-campus holiday)
July 9, Mon.	Beginning of second four-week session
Aug. 3, Fri.-Aug. 4, Sat.	Summer session examinations

First Semester 1979-80

Aug. 22, Wed.-Aug. 24, Fri.	Registration
Aug. 27, Mon.	Instruction begins
Sept. 3, Mon.	Labor Day (all-campus holiday)
Nov. 21, Wed., 5:00 p.m.-Nov. 25, Sun.	Thanksgiving vacation
Dec. 14, Fri.-Dec. 21, Fri.	Semester examinations

Second Semester 1979-80

Jan. 16, Wed.-Jan. 18, Fri.	Registration
Jan. 21, Mon.	Instruction begins
Mar. 29, Sat., 1:00 p.m.-Apr. 6, Sun.	Spring vacation
May 10, Sat.-May 17, Sat.	Semester examinations
May 18, Sun.	Commencement exercises

Summer Session 1980

June 12, Thurs.-June 13, Fri.	Registration
June 16, Mon.	Instruction begins
July 4, Fri.	Independence Day (all-campus holiday)
July 14, Mon.	Beginning of second four-week session
Aug. 8, Fri.-Aug. 9, Sat.	Summer session examinations

GRADUATE EDUCATION AT THE UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

The University of Illinois was founded in 1867 as the land grant institution of the State of Illinois. The University of Illinois is composed of three campuses — the Medical Center and the Chicago Circle campuses in Chicago and the original campus at Urbana-Champaign.

From modest beginnings as the Illinois Industrial College, the Urbana-Champaign campus has grown to a community of more than 34,000 students of whom 7,500 are enrolled in the Graduate College. The Urbana-Champaign campus is the center of graduate education in the University of Illinois system. A distinguished graduate faculty of more than 1,300 members supervises and guides graduate study leading to advanced degrees in more than 100 fields of study.

The Graduate College is an administrative unit which has jurisdiction over all programs leading to advanced degrees. It is the statutory responsibility of the Graduate College to develop and safeguard standards of graduate work and to promote and assist research by faculty members and graduate students in all fields.

The responsibility for initiating, developing, and administering degree programs is delegated to the departments and other academic units. The Graduate College provides supporting services as well as general supervision to these degree-granting units. All postbaccalaureate students, except those in curricula leading to the degrees of Juris Doctor and Doctor of Veterinary Medicine, are enrolled in the Graduate College rather than in a disciplinary college.

RESEARCH AND INSTRUCTIONAL RESOURCES

The University of Illinois at Urbana-Champaign is a comprehensive graduate institution. A distinguished graduate faculty, outstanding research facilities, one of the top-ranked libraries in the nation, and superior computer facilities make the Urbana-Champaign campus a stimulating environment for graduate study and research.

It is not possible to describe here all of the research facilities and educational opportunities available to graduate students on the Urbana-Champaign campus. The information on the following pages provides some description of the facilities and resources which are centralized and available to students and faculty in the ten broad fields of study of the disciplinary colleges — agriculture, applied life studies, commerce and business administration, communications, education, engineering, fine and applied arts, law, liberal arts and sciences, and veterinary medicine. The instructional and research programs of individual departments and of interdisciplinary and other graduate units are described in the "Programs of Study" section of this catalog.

UNIVERSITY LIBRARY

The University Library's resources for advanced study and research are exceptional. Its catalogued collections exceed 5½ million volumes. Its uncatalogued collections include 515,000 pamphlets, 460,000 maps and aerial photographs, 900,000 music scores and parts, and 1,350,000 microtexts. In addition, the Library receives more than 80,000 periodicals, serials, and newspapers. This wealth of material is housed in the main library (3,800,000 volumes in the bookstacks) and thirty-four departmental libraries at various locations about the campus.

Outstanding collections have been developed in a number of areas. In the humanities: classical literature and archaeology; English litera-

ture of the sixteenth through the twentieth centuries; Romance and Slavic literature; German literature of the sixteenth and seventeenth centuries; American humor and folklore; and comparative philology. In the fine arts: architecture; landscape architecture; and music. In the social sciences: history of the western United States; Abraham Lincoln and the Civil War; Latin America of the revolutionary period; the Slavic countries; Ireland; medieval and modern Europe; international law; labor ind industrial relations; and political science. In the sciences and technology: agriculture; biological sciences (especially entomology, ornithology, and parasitology); chemistry; geology; mathematics; and physics.

The Rare Book Room houses a superior collection of more than 115,000 volumes, including more than 1,000 incunabula. The collection has three major areas of strength: English history and literature, the history of geology, and the emblem book collection. The Milton collection is the finest in the world, including more than 400 different editions of his works published during the seventeenth and eighteenth centuries. The oldest printed book is a 1455 copy of the Book of Genesis of the Gutenberg Bible; the most valuable is the Audubon Folio on permanent display. The catalog of the collection has been published.

The completeness of the bibliographic and reference facilities makes any sort of research possible. In addition, interlibrary loan service is provided for faculty and graduate student research.

GENERAL COMPUTING FACILITIES

The Computing Services Office (CSO) on the Urbana-Champaign campus provides support for all academic and research programs in which computers play a significant role. To meet this broad objective, CSO operates three general-purpose computers, a large CDC CYBER 175, an IBM 360/75, and a PDP 11/50. These systems are interconnected and serve a network of RJE facilities, public terminal sites, and dial-up terminals. CSO operates sites around the campus as well as serving private facilities.

Administration of computing facilities is guided by the principle that users should have easy access to computer support. Access to the system is provided through formal allocations for courses and research, and through a "limited free access" policy for students. In addition to its own facilities, CSO arranges access to other computers within the University.

Members of more than 100 University departments use CSO facilities. The graduate curricula are heavily dependent on computing support, and a large percentage of dissertations require some computer

use. Approximately two-thirds of the utilization is related to graduate programs and research. Unusual areas of strength include computer music and computer art, in addition to those in more quantitative disciplines. CSO is currently automating the circulation system of the University Library.

CSO offers a full complement of computer-related user services, including consulting on systems, packages, and hardware. Support services in keypunching, hardware maintenance, and text processing are also available on a limited basis.

The primary facility, CSO North, is located in the Digital Computer Laboratory, and houses the IBM 360/75, the CYBER 175, and most of the CSO offices. Here systems consultants offer a wide range of services ranging from a walk-in consulting office to short courses and seminars.

A second major facility, CSO South, is located in the Commerce Building (West). It consists of two remote job entry stations, terminals connected to the CYBER 175, and a statistical consulting office. Two major facilities staffed by students are located in residence halls.

The long tradition of computer use at Illinois has led to widespread strength both within CSO and across the campus, and CSO provides general support to keep the University in the forefront in areas where computing is important.

COMPUTER-BASED EDUCATION

The PLATO system (Programmed Learning And Teaching Operations), a unique computer-based educational system, was developed in the Computer-based Education Research Laboratory (CERL) on the Urbana-Champaign campus. PLATO is an interactive, time-sharing system whose computers control 1,100 terminals located throughout the country. A CDC 6500-series computer with two central processors and 128,000 sixty-bit words of central memory and a CYBER 73 with two processors and 65,000 sixty-bit words of central memory are the heart of the system. The system also includes two million words of extended core storage and one million words of auxiliary memory storage, plus twenty disk drives providing permanent storage of ten million words per drive.

The PLATO terminals use plasma panels for visual display. The plasma panels and the computer-to-terminal communication scheme were developed at CERL, as were the terminals and other devices such as touch panels and audio. Although the computers are dedicated to educational use and provide teaching facilities for about 140,000 hours of student and author use per semester, hardware and software research continues in the laboratory. Opportunities are

available for research in designing smaller and less expensive terminals, low-cost replacement of core-based swapping memory, communication devices, and voice recognition and synthesis devices.

CERL also cooperates with faculty in many departments who wish to develop courseware for the system and to incorporate it in their instruction. There are approximately 350 PLATO terminals on the Urbana-Champaign campus, more than 200 of which are available for student use. Individualized instruction on the PLATO system with immediate and rapid feedback is offered in many campus courses, both undergraduate and graduate. Lessons exist in more than 100 subject areas. The PLATO system also plays a role in the recreational life of the campus with its variety of interesting games, and is a fascinating communication device providing electronic mail service and immediate message exchange between users. At least 8,000 students per semester are involved with the PLATO system.

Courseware is written in the TUTOR language, a powerful and efficient language created for the PLATO system, which allows design, programming, and testing of lesson materials by the authors directly at the terminals. The PLATO computers are dedicated to teaching, but the system is also used for scientific computation, information retrieval, word processing, data processing, and personal services.

In addition to the University of Illinois system, there now exist six other PLATO systems in Canada, Minnesota, Belgium, Florida, and Delaware, with electronic linkage to each other.

AGRICULTURE

The College of Agriculture is a diverse organization with a number of different missions that have been developed and refined during the more than a century that it has been in existence. Broadly speaking, the missions relate to commercial agriculture, including environmental concerns and preservation of our natural resources, and to improvement of the quality of life both in the home and the community. Much of the work of the college is a search for solutions to specific problems and for ways to bring new knowledge to those who need it. Its work penetrates into all parts of society and all parts of the world.

The College has active programs in four broad areas — teaching, research, international programs, and extension education and public service. The college includes the School of Human Resources and Family Studies and the Departments of Agricultural Economics, Agricultural Engineering, Agronomy, Animal Science, Dairy Science, Food Science, Forestry, Horticulture, and Plant Pathology. More than

16,000 acres of college farmland in all parts of Illinois are used for experimentation. The academic and professional staff numbers more than 1,500, many of whom work in more than one of the four areas of the college.

Progams for graduate students in the various departments and the school are described in their sections later in this catalog. Approximately 125 of the college faculty are members of the graduate faculty. About 525 graduate students register each year for work in the college, and approximately 50 Ph.D. and 120 M.S. degrees are conferred annually. Nearly 2,500 students are enrolled in the undergraduate programs of the college.

The college conducts research through the Agricultural Experiment Station, and graduate students are an integral part of that research. Because research often involves more than one field of study, much of it is conducted in cooperation with other colleges on the Urbana-Champaign campus, with the state surveys located on the campus (Geological, Natural History, and Water), with the U.S. Department of Agriculture, and with other agricultural colleges. Interdisciplinary research is encouraged in such special areas as crop and animal production, environmental quality, pest management, and food and nutrition. Financial support for research comes from appropriations by the State of Illinois, from federal appropriations and contracts, and from private gifts.

Student interest and requests for information and assistance demonstrate that Illinois education, agriculture, and agribusiness are in the forefront of world food production and development. In the future, many students will go into the world employment market, directly or indirectly, even if they live and work in the United States. Several courses in the departments of the college emphasize international agriculture; research is carried on with the goal of assisting developing countries to expand their own capability for food production. Faculty exchanges and cooperative research with foreign institutions and agencies offer opportunities for mutually beneficial programs. The broad supervision of the college's international activity is in the Office of International Agricultural Programs. Some major international interests in the College of Agriculture include soybeans, maize, animal agriculture, and food nutrition.

Most of the college's extension education work is through the Cooperative Extension Service, which has a staff of state, regional, and county specialists in 115 offices throughout the state. The Cooperative Extension Service has nearly 550 academic and professional staff and about 675 paraprofessionals and other support personnel.

At present the College of Agriculture is in an early phase of a pro-

jected major development in buildings, land, and equipment called "Food for Century III." Over the next decade the program calls for twenty-one new building projects, major remodeling of several present buildings, acquisition of land for research and major pieces of fixed equipment, and development of research and extension facilities in northern, southern, and western Illinois. The first phase of the program will be the construction of the Agricultural Engineering Sciences Building in 1978-79.

APPLIED LIFE STUDIES

The College of Applied Life Studies is composed of three academic departments: Health and Safety Education, Leisure Studies, and Physical Education.

The goal of the Department of Health and Safety Education is an informed society which practices healthful and safe living patterns. The mission of the department and the role of the professional in the field of health and safety education include developing processes which effectively inform and motivate society and advocating and working toward achieving the desired individual, institutional, and environmental changes necessary to the attainment of this goal. Emphasis is placed on the development of analytical competencies by students such as the use of model construction and evaluation and the use of these tools of analysis for program development in the field of health and safety. Research facilities in the department include a general-purpose resource laboratory, driving simulator units, a multiple car driving range, PLATO terminals, and a classroom individual student response system.

The Department of Leisure Studies has as its central focus a concern for leisure behavior; its goals are to improve the understanding of leisure behavior and the quality of leisure service delivery systems. The Leisure Behavior Research Laboratory is the organized research unit of the department. The primary research objectives are to acquire knowledge about leisure behavior from the social-psychological and sociological perspective, and play and movement behavior of children and adults in leisure-time activities. The laboratory also studies leisure of the handicapped and other special populations.

The Department of Physical Education is committed to the study of human movement in its bioscientific, social scientific, and educational aspects. Research areas include biomechanics, structure and function of the moving organism, motor learning and development, physiology of activity, psychology of sport, sociology of sport, and program development (curricula, adapted programming, and exercise therapy). The department maintains outstanding research facili-

ties, including the Biomechanics Research Laboratory, the Curriculum Research Laboratory, the Exercise Therapy Clinic, the Motor Behavior Research Laboratory, the Motor Learning and Development Research Laboratory, and the Physical Fitness Research Laboratory.

COMMERCE AND BUSINESS ADMINISTRATION

The College of Commerce and Business Administration offers graduate work in the Departments of Accountancy, Business Administration, Economics, and Finance. The professional degrees, Master of Accountancy and Master of Business Administration, are offered in addition to the masters' degrees and Ph.D. in each of the departments.

Although the lecture-discussion form of teaching is widely used in the college, the faculty utilizes a variety of other resources to aid in the teaching process. The organization theorists use the Behavioral Laboratory for evaluating the small-group decision-making process. The computer is widely used in teaching statistics and operations research. Many cases and simulation programs and games in business administration and finance courses are dependent on the computer to generate analytical information. Also, many courses involve students in the writing of computer programs or the use of SOUPAC programs for research.

Faculty and students rely heavily on the outstanding resources of the Library, which has a large collection of serials and periodicals. The Office of Instructional Resources aids in the improvement of the teaching skills of faculty and teaching assistants. The Executive-in-Residence Program and the Executive Lecture Series bring visiting business executives to the campus to present lectures and lead discussions on specific topics.

The most outstanding resource of the College of Commerce and Business Administration is its research-oriented faculty. The Bureau of Economic and Business Research provides and interprets a variety of state and local economic data for governmental bodies and industries. Additionally, the Library provides substantial data on individual companies in addition to text books, reference documents, current periodicals, and serials. The college has acquired several financial data files such as the Chicago Research on Stock Prices (CRSP), the Federal Trade Commission Quarterly Financial Standard, and Poor's Compustat Tapes.

The Survey Research Laboratory is widely used by faculty and students interested in survey work. The Behavioral Laboratories are used in performing a variety of behavioral experiments, and the computer is a major tool for hypothesis testing and programming.

COMMUNICATIONS

In the College of Communication, the Institute of Communications Research, which administers the doctoral program in communications, is a pioneer interdisciplinary center that investigates virtually all aspects of human communication. It provides students the opportunity to study and to conduct research with a faculty that joins such disciplines as political science, sociology, psychology, and linguistics with the professional fields of advertising, broadcasting, and journalism. The University broadcasting division, which operates WILL-AM-FM-TV, provides equipment and studios for broadcast instruction. The college also maintains laboratories for audio production, typography, and photography. Holdings in the Communications Library in Gregory Hall are widely regarded as the best in the nation.

EDUCATION

Seven units with specialized research interests are supported by the College of Education in addition to research conducted principally within the academic departments. (The academic departments, all of which have graduate teaching and research programs, are Administration, Higher, and Continuing Education; Educational Psychology; Elementary Education; Educational Policy Studies; Secondary Education; Special Education; and Vocational and Technical Education.)

The Office of Bilingual Multicultural Education studies the nature and purposes of curriculum and instructional materials used in bilingual multicultural education, with particular emphasis on the relationships between language and culture, and achievement and native language maintenance.

In the Bureau of Educational Research, staff members from a number of areas of specialization concentrate a major portion of their time on basic research; devote the remainder to graduate teaching and advisement of students; and afford graduate assistants an opportunity for experience and training in research.

The faculty in the Center for Instructional Research and Curriculum Evaluation (CIRCE) conduct research on the methods and rationales for evaluating educational programs.

Members of the Committee on Culture and Cognition do naturalistic research on the functioning of the mind and emphasize humanistic values in education and life.

The Max Beberman Laboratory for the Study of Curriculum utilizes the University High School, grades 7-12, in its examination of particular aspects of the learning and teaching of secondary school subjects and the secondary school as an institution.

The Institute for Child Behavior and Development brings faculty from many disciplines to work on research and training on the full range of behavior and development of normal and exceptional children.

The Reading Center has as its major research goal a clearer and more complete understanding of reading comprehension and the design of instructional materials for use in grades 4-8.

All these units have active research programs and offer assistantships or fellowships to qualified doctoral students.

ENGINEERING

The College of Engineering was one of the original units of the University when it was founded in 1868. Now into its second century of operation, the college is recognized as a major international center of excellence in graduate education in scope, quality, and productivity. The quality of the graduate faculty of the college has been ranked among the top four engineering schools in the U.S. by the American Council on Education, and a survey of engineering deans listed the college as second among engineering colleges in the United States in terms of overall quality. In recent years, one out of every twenty Ph.D. graduates in engineering received his or her degree from the University of Illinois at Urbana-Champaign.

The college's Engineering Experiment Station was organized in 1903, the first of its kind, and had separately budgeted research expenditures in the 1977 fiscal year of $19.9 million. Special laboratories and unusual facilities such as the nuclear reactor, radio and optical telescopes, and electron microscopy center, and a radio isotope laboratory are available. University computer services are provided by an IBM 360/75, a CDC 6700, two DEC 10s, and a number of smaller dedicated computers. The Engineering Library holds 132,000 volumes and more than 3,000 serial titles. It is supplemented by a series of departmental libraries such as mathematics, physics, chemistry, and geology.

The departments of the college offer master's and doctoral degree programs in aeronautical and astronautical, ceramic, civil and environmental, electrical, mechanical and industrial, metallurgical and mining, and nuclear engineering, and in computer science, physics, and theoretical and applied mechanics. Interdisciplinary specialties include bioengineering, engineering design, environmental control, and materials engineering.

The college maintains two major interdisciplinary research laboratories: the Coordinated Science Laboratory (CSL) and the Materials Research Laboratory (MRL). CSL provides an interdisciplinary re-

search environment for faculty and students from engineering as well as other disciplines. MRL supports research and education in the materials sciences in cooperation with a number of engineering and scientific disciplines; multidisciplinary research basic to an understanding of the solid state of matter is stressed. Both laboratories maintain special facilities and shops to promote their programs of investigation.

FINE AND APPLIED ARTS

The College of Fine and Applied Arts includes the Departments of Art and Design, Architecture, Dance, Landscape Architecture, Theatre, and Urban and Regional Planning, and the School of Music. The "research" resources for these departments are also the cultural resources of the campus described in another section of this catalog. The Krannert Center for the Performing Arts provides studio space for classes in theatre, dance, and music; graduate students participate in many of the public performances in its four theatres. Students in the Department of Art and Design have an annual exhibition of their work in the Krannert Art Museum, which is connected to the Fine and Applied Arts Building. The work of architecture students is exhibited in the Temple Buehl Architecture Gallery.

Many visiting artists, performers, and speakers are brought to the campus under the auspices of the college and its departments. Special libraries in art and architecture, city planning and landscape architecture, and music serve students and faculty in the fine and applied arts.

LAW

The College of Law offers graduate training in all areas of its curriculum. The emphasis for graduate lawyers from the U.S. and from Commonwealth countries, whose legal system is based on the common law, is to provide advanced training in preparation for a career in teaching or specialized practice. A substantial program in international legal studies affords opportunities both for U.S. graduates and foreign lawyers to select from a wide variety of advanced courses, and to engage in research dealing with all phases of international transactions. The main geographic focus of the international legal studies program has been on the legal systems of Latin America and of Western and Eastern Europe.

LIBERAL ARTS AND SCIENCES

The comprehensive graduate instruction and research in the liberal arts and sciences is conducted on the Urbana-Champaign campus

in the departments of four schools — Chemical Sciences, Humanities, Life Sciences, and Social Sciences — and in six independent departments — Astronomy, English as a Second Language, Geology, Mathematics, Psychology, and Speech and Hearing Science. The graduate instructional programs of the individual departments are discussed in the "Programs of Study" section of this catalog.

Chemical Sciences

The School of Chemical Sciences provides a centralized administrative and service structure for the teaching and research programs in the Departments of Biochemistry, Chemical Engineering, and Chemistry. Currently there are about 1,000 undergraduate concentrators and majors, 435 graduate students, 60 postdoctoral students, and 70 faculty members involved in the various programs in the school. For graduate students, the programs available are Master of Science and Doctor of Philosophy degree programs in each of the three departments, a Master of Science degree program in the teaching of Chemistry, and a joint program with the Department of Physics leading to the Doctor of Philosophy in Chemical Physics.

Of particular value to the graduate students in the School of Chemical Sciences is the array of service facilities that are provided on a centralized basis. These facilities free faculty members for greater concentration on teaching and directing graduate student thesis research. The facilities also assist the students in a variety of ways. Of direct importance to the students are the 45,000-volume Chemistry Library, the Chemistry Placement Office, and several technical service facilities. The technical facilities include molecular spectroscopy, mass spectroscopy, and laser spectroscopy laboratories, a radioisotope laboratory, a computer center, a microanalytical laboratory, hydrogenation and high-pressure facilities, and machine, electronic, electrical, and glass-blowing shops. These laboratories and shops are staffed with full-time technical personnel who maintain the facilities, supervise their scheduling, and, in many cases, provide instruction on their use. Most of them are operated on an open-shop basis in which qualified students are permitted to work without supervision.

Humanities

The School of Humanities is the association of twelve departments and programs in the humanities; it also maintains cooperative relationships with allied departments in other colleges. The school encompasses the Departments of the Classics; English; French; Germanic Languages and Literatures; History; Linguistics; Philosophy;

Slavic Languages and Literatures; Spanish, Italian, and Portuguese; and Speech Communication; and the Programs in Comparative Literature and Religious Studies. The various departments and programs consist of almost 300 faculty and approximately 500 graduate teaching and research assistants. The School of Humanities' primary responsibility is to promote humanistic teaching, research, and public service both in the traditional disciplines and in interdisciplinary fields. In addition to traditional fields of study, the school offers various special and interdisciplinary subjects including cinema studies, American civilization, medieval civilization, and Renaissance studies. Graduate programs leading to the master's and doctoral degrees are available in American civilization and the history and philosophy of science; these programs and the work of individual degree candidates are supervised by interdisciplinary advisory committees.

Other units within the school offer special research and study opportunities. The Unit for Cinema Studies promotes and coordinates the critical and historical study of the cinema through teaching and research within Humanities departments, and cooperates with other units dealing with cinema or cinematography. Its membership represents several departments and reflects a variety of critical and scholarly interests. The unit is also a resource center which promotes cinema teaching and scholarship through its growing archive of film materials and its editorial and analytical equipment for film study.

The Language Learning Laboratory (LLL) supports the instructional needs of humanities and related departments, and promotes research on language learning and teaching, as well as the development of experimental or new programs and methodologies. For these activities LLL is equipped with advanced technological resources, including PLATO, television production facilities, and capabilities in other audiovisual media.

The Division of Applied Linguistics is primarily research oriented and concentrates on crosscultural and crosslinguistic work with an international perspective in several fields. Reseach areas within this division include lexicography, linguistics and language pedagogy, sociolinguistics and multilingualism, language acquisition, and applied phonetics.

Life Sciences

In addition to excellent laboratory equipment, the students and faculty of the School of Life Sciences have access to some unique facilities. The Illinois Natural History Survey, which is oriented primarily toward research on renewable natural resources in the state, has

laboratories located on the Urbana-Champaign campus with field laboratories throughout the state. The resources and the facilities of the survey are available to all of the departments in the School of Life Sciences. Many of the survey staff members hold joint appointments in the Departments of Botany; Entomology; and Ecology, Ethology, and Evolution.

The Museum of Natural History at the University of Illinois has served students in graduate research and faculty since the 1870s. A number of special collections are housed in the museum. There are outstanding research collections of reptiles, amphibians, mammals, and shells from all parts of the world. Research specimens used by graduate students and faculty scholars for advanced scientific study number over 400,000. The labelled specimens in the research collections include 51,000 mammalian, 5,400 bird, 94,000 reptile and amphibian, 600 fish, 11,000 fossil, and 150,000 mollusk specimens.

There are also a number of natural areas owned by the University and managed by the School of Life Sciences for undergraduate teaching purposes as well as graduate and faculty research. These natural areas represent a variety of plant forest habitats, flood plain forests, reconstructed prairie, and abandoned farm lands which allow for a great deal of manipulation in natural settings. In addition to these major facilities shared by a number of departments and faculty, all of the departments in Life Sciences (Botany; Entomology; Ecology, Ethology, and Evolution; Genetics and Development; Microbiology; Physiology and Biophysics) as well as the interdisciplinary programs (Cell Biology, Ecology, Plant Physiology, Neural and Behavioral Biology) have outstanding research apparatus that one would expect in a modern biology laboratory, among them, amino acid analyzers, ultracentrifugues, spectrophometric equipment, and scintillation counters.

The Center for Electron Microscopy is a campus facility conducted under the direction of the School of Life Sciences. The Center for Electron Microscopy is not just an electron optics research laboratory; rather, it is designed to serve the varied research needs of faculty and students and to provide an extensive training program. Its inventory of transmission electron microscopes includes routine performance instruments (RCA EMU 3C, 3E, and 3H) and conventional high-resolution microscopes (Siemens Elmiskop 1, Hitachi HU-11 and 11C, and JEOL JEM-6A). For those requiring the highest resolving power, the center offers the JEOL JEM-100C, a state-of-the-art 100kV microscope with a lattice resolvancy of 1.4 Angstroms. The center provides two high-quality scanning electron microscopes: the Kent-Cambridge Stereoscan, fully equipped with a nondispersive X-ray analyzer hav-

ing multimode output; and the JEOL JSM-U3, one of the finest of the class utilizing a thermionic emitter. It is also equipped with one of the most versatile electron microprobes available, the JEOL JXA-50A.

Ancillary equipment available to all users includes various ultramicrotomes, automatic knifebreakers, a pyramid cutter, several vacuum evaporators, a tissue drier, and a critical point drying device. For special techniques one ultramicrotome is equipped with a cryogenic sectioning kit; and one vacuum evaporator is equipped with an electron gun for vapor deposition of refractory materials and stages for freeze-etch and freeze-fracture work. Several completely equipped darkrooms and general specimen preparation facilities are also available.

The center's training program is the largest in the nation and is one of the few offering full training in scanning electron microscopy. Graduate courses are offered in both transmission and scanning modes. Both the theoretical and practical aspects of electron microscopy are stressed so that students with no prior knowledge of electron microscope operation, specimen preparation, or photography are, after one semester's study, able to apply the tool to their research problems. An intensive training program is also offered during the summer for faculty and staff wishing to acquire the skills requisite to high-quality transmission electron microscopy.

Social Sciences

The units in the School of Social Sciences (including the Departments of Anthropology, Geography, Political Science, and Sociology, and the Centers for Asian Studies and Latin American and Caribbean Studies) offer a variety of research and instructional resources for graduate study. Prominent interdisciplinary-oriented resources in the School of Social Sciences include the Social Science Quantitative Laboratory (SSQL) and the Spatial Data Analysis Laboratory (SDAL).

SSQL is responsible for developing and improving instructional approaches in social systems modeling and data analysis and for assisting social science faculty and students in the acquisition of research grants and in the execution of research projects. To accomplish these objectives, SSQL maintains a computer operations unit that has full remote job entry and interactive access to the University's CDC CYBER-175 and IBM-360/75 computers; a consulting and archival services unit with a professional staff of consultants and archivists to assist social science faculty and students in computer programming and in the use of any of the several hundred social science data sets archived by SSQL; and a research-training projects unit that assists

social science faculty and students in the acquisition and execution of research projects. SSQL is governed by an executive committee, chosen from among the faculty members in each of the departments in the school, which works closely with the departments in the development of their instructional and research programs.

SDAL, administered by the Department of Geography, is responsible for developing and improving research and instruction related to the acquisition, analysis, and display of spatial data. To achieve these objectives, SDAL maintains a computer digitizer unit; an optical information processing unit; darkroom facilities; and an air photo and remote sensing teaching unit. Special facilities exist for satellite image color compositing; for digital and optical image interpretation, cartographic digitizing and computer mapping, digital terrain modeling and surface analysis; and for the further photographic processing of computer-derived maps and images. SDAL also maintains several spatial analysis program libraries.

VETERINARY MEDICINE

The graduate programs in the College of Veterinary Medicine emphasize research training involving animal health, infectious and metabolic diseases, zoonotic diseases, public health, and comparative medicine. Fields of specialization include anatomy, clinical sciences, immunology, microbiology, parasitology, pathology, pharmacology, physiology, and public health. The graduate programs are designed with a core of appropriate courses from within the college, supplemented by related courses from other departments of the Graduate College.

The college has new excellent clinical facilities for large and small animal medicine. Additional research and laboratory animal space is currently in construction, and a new basic science facility is proposed. The new and proposed construction will provide the college with outstanding facilities for graduate study and research. Interdisciplinary research is ongoing with other colleges on the Urbana-Champaign campus and at the Dixon Springs Agricultural Center in southern Illinois. These facilities and programs provide outstanding opportunities to conduct basic clinical and applied studies under controlled confinement and under natural environmental conditions. Association with the Illinois State Department of Public Health, Department of Agriculture, and Department of Conservation provides opportunities to utilize field facilities for appropriate research projects.

SPECIAL RESOURCES, FACILITIES, AND SERVICES

CULTURAL RESOURCES

The University of Illinois at Urbana-Champaign provides the campus community with a broad spectrum of cultural resources. The four theatres of the Krannert Center for the Performing Arts, the Assembly Hall, and other facilities on the campus present a diversity of events in music, theatre, dance, and cinema usually found only in large metropolitan centers. There are well over 500 public performances each year ranging over the entire spectrum of the performing arts. Internationally known professional performers are brought to the campus to augment the offerings of the Departments of Theatre and Dance and the School of Music.

The Krannert Art Museum has a full schedule of exhibitions, both from its own collection and traveling exhibitions. The Festival Gallery in the Krannert Center for the Performing Arts brings to the campus a series of one-man shows of the work of contemporary artists. The World Heritage Museum, the Natural History Museum, and the John Phillip Sousa Museum and Library serve the purposes of research, teaching, and enjoyment. The Temple Buehl Architecture Gallery provides for the exhibition of student work in architecture and related areas of study.

The Japan House provides members of the campus community an opportunity to experience the teaching of Japanese arts in a realistic environment.

Distinguished public figures and outstanding scholars appear regularly on campus for symposia, lectures, forums, and public discussions.

WILL-TV and AM-FM radio station, all affiliated with the Public Broadcasting Service, provide a wide range of cultural programs to a large area of the state.

The Illini Union, the campus social center, offers lounges, dining

facilities, and recreational and meeting rooms for individuals and groups. Special events are scheduled throughout the year. The Illini Union Gallery provides exhibits of a broad range of contemporary art and craft objects.

Extensive and varied recreational facilities are available to students and faculty on the Urbana-Champaign campus. The Intramural–Physical Education Building contains four gymnasiums, handball-racquetball courts, squash courts, games room, indoor and outdoor 50-meter swimming pools, archery range, golf driving and putting room, combatives room, saunas, locker and shower facilities, and an outdoor ice rink–tennis court combination. Other indoor recreation facilities are located in Freer Gymnasium, Huff Gymnasium, and Kenney Gymnasium. In addition, there are forty-three tennis courts on campus, and the University has three golf courses, one nine-hole course in Urbana and two eighteen-hole courses in Savoy near the University's Willard Airport. The thirty miles of hiking trails at Allerton Park, a 1,500-acre woodland estate near Monticello owned by the University, are open to the public. Allerton House is used as a conference center.

In addition, the Urbana and Champaign park districts and the Champaign County Forest Preserve District maintain extensive park and recreation facilities.

CENTER FOR ADVANCED STUDY

The Center for Advanced Study is a special academic unit of the Graduate College, committed to recognizing excellence in scholarship and creative achievement, which provides opportunities for selected faculty to expand their professional capabilities and encourages the development of new programs and research initiatives. The Resident Studies Program of the center is aimed at generating new programs and enhancing collaboration across departmental and institutional boundaries on problem issues of importance to the campus or to society at large. These activities include problem-oriented projects, seminars, workshops, and temporary faculty appointments, all intended to encourage faculty members to develop collaborative networks and new educational and research programs.

The center also supports and participates in the activities of the George A. Miller Endowment Committee and the George A. Miller Committee. Known as MILLERCOMM, the Miller Committee annually sponsors, or cosponsors with other academic units, lectures, seminars, and other events of broad cultural interest. MILLERCOMM also brings to the campus men and women of unique accomplishment in both academic and public life to interact with students, faculty, and staff of the campus.

INTERNATIONAL PROGRAMS AND STUDIES

The University of Illinois offers many opportunities for graduate students to pursue international studies both at home and abroad. Graduate student research forms an integral part of University projects in Costa Rica, Colombia, Iran, Puerto Rico, Tunisia, and other countries. Research opportunities are available through the Center for International Comparative Studies, the Center for African Studies, the Center for Asian Studies, the Center for Latin American and Caribbean Studies, the Center for Russian and East European Studies, the Illinois Tehran Research Unit, and many departments. For full information on these opportunities, as well as other graduate study-abroad programs and a wide range of courses and seminars in international studies, write for the handbook "International Programs and Studies at the University of Illinois at Urbana-Champaign," obtainable from the Office of International Programs and Studies, 3014 Foreign Languages Building, Urbana 61801.

In addition, overseas teaching opportunities are available in music education, English as a second language, and some of the modern language departments. Interested students should contact the executive officer of the appropriate department or division.

CIC TRAVELING SCHOLAR PROGRAM

The Committee on Institutional Cooperation, a voluntary association of the Big Ten universities and the University of Chicago, has established the Traveling Scholar Program as part of its effort to increase cooperative use of its member institutions' resources. The program enables doctoral-level students to attend other CIC institutions in order to take advantage of special course offerings, laboratory facilities, or library collections. Visits of traveling scholars are limited to one year. Traveling scholars register and pay regular fees at their home universities. Credit earned while in this program is automatically accepted by the home university.

Application forms are available from the Graduate College, 330 Administration Building, Urbana 61801.

REHABILITATION-EDUCATION SERVICES

Since 1947 the University of Illinois has pioneered in facilitating the education of physically disabled students. Campus facilities are among the best in the nation, and applications from persons with physical disabilities are welcomed. The Division of Rehabilitation-Education Services, which is responsible for the planning of all campus facilities to ensure that they are accessible to and usable by the

physically disabled, provides a variety of services and opportunities to physically disabled students, including early registration privileges, housing arrangements, transportation, prosthetic repair, physical therapy and functional training, medical services, recreation and athletics, and services to the visually and hearing impaired. Applicants are encouraged to make direct contact with the division at the Rehabilitation-Education Center, Champaign 61820, for further information.

Since some graduate programs require a variety of physical skills, prospective students with permanent physical disabilities are strongly encouraged to communicate with the division to ascertain how their particular program can be implemented. The division works closely with academic units to establish the manner in which degree requirements can be met.

HOUSING

The University maintains housing for single graduate students in two residence hall complexes within easy walking distance of the campus. Each room is furnished and directly connected with a complete bath shared with the occupant(s) of one or two other rooms. Single and double rooms are available. Lounge facilities, laundry service rooms, and vending machines provide the essential features of day-to-day living. A contract for food service in undergraduate dining halls may be arranged.

Furnished efficiency, one-bedroom, and two-bedroom apartments are available to married students. Some two-bedroom units are unfurnished, but all include stoves and refrigerators. Convenient laundry facilities are available.

The Housing Division also maintains a current listing of private apartments and rooms available in the community. Students seeking private housing are urged to visit the campus as early as possible, as all reservations for this type of accommodation must be made in person. Anyone unfamiliar with standard leasing practices should ask a Housing Division consultant for assistance in reviewing the terms of a lease. In some instances, when demand for this type of accommodation is at a peak, it may be necessary to reserve an apartment as much as three months prior to the opening of the school term.

Applications for accommodations in University graduate residence halls or University-owned apartments for married students may be obtained from the Housing Information Office, 420 Student Services Building, Champaign 61820. Assignments are made and leases issued to applicants until all available space has been assigned. Priority in assignment is determined by the date the completed ap-

plication is received by the Housing Division. No discrimination in any of these facilities may be made with respect to race, religion, and national origin. Private housing listed must also comply with this policy.

HEALTH SERVICE AND INSURANCE

Students enrolled in credit courses who are in attendance on the Urbana-Champaign campus are assessed the hospital-medical-surgical (HMS) fee which covers (1) health service at the McKinley Health Center and (2) group health insurance.

Health Service

The McKinley Health Service portion of the HMS fee supports the medical services available at the McKinley Health Center, located on campus. Dependents are not eligible for care at the Health Center unless they are also enrolled students on the Urbana-Champaign campus. McKinley Health Center offers four basic types of care: routine office care, hospitalization, care for injuries or acute illnesses, and mental health care. These services are available at no additional cost to all students who have paid the HMS fee.

Health Service physicians provide general medical care and advice while the student is on campus, and students may consult the Health Service physician of their choice by appointment. The physician can utilize a wide range of diagnostic tests, including laboratory procedures, X-ray examinations, and electrocardiograms. A limited pharmacy provides drugs at no cost for students when they are under the care of a Health Service physician.

The inpatient section of the center, McKinley Hospital, is a thirty-two bed medical hospital owned by the University and fully accredited by the Joint Commission on Accreditation of Hospitals. The medical staff includes both community and Health Service doctors.

Group Health Insurance

The University insurance plan provides worldwide hospital-medical-surgical coverage (up to $50,000) for the insured student, who may choose any legally qualified hospital or licensed physician. The coverage is provided on a semester basis and includes all holidays in the semester as well as the period between semesters. Brochures describing the University insurance plan in detail are available at registration and at the Insurance Office, Window 20, 100 Administration Building.

Students presenting evidence of continuing equivalent medical insurance coverage will be exempted from payment of the fee for

the University Insurance Plan upon approval of a petition submitted to the Insurance Office during regular registration, or within the period provided for the exemption of fees for the relevant term.

Students enrolled in the second semester who do not plan to attend the summer session may elect to extend the insurance for the entire summer vacation period by making application and paying the insurance portion of the HMS fee at the Insurance Office between April 15 and the seventh calendar day of instruction of the summer session. Coverage of the insured student's eligible dependents may also be extended for the period. Although summer insurance coverage does not include medical services at the McKinley Health Center, students may retain the use of the Health Center for the summer period by paying an additional fee at the Insurance Office.

REQUIREMENTS AND PROCEDURES

ADMISSION AND REGISTRATION

General Requirements

The Graduate College considers for admission only those applicants who hold or will be granted at the end of the current academic year a baccalaureate or an equivalent degree comparable to that granted by the University of Illinois, and whose admission average is at least 4.0 (A = 5.0) computed from the last 60 hours of undergraduate work and any graduate work completed. Meeting these minimum admission requirements of the Graduate College does not guarantee admission. Individual departments may set a minimum grade-point average higher than that of the Graduate College and may impose other special admission requirements and conditions.

Applicants for admission to the Graduate College with undergraduate academic records showing "pass," "satisfactory," "credit," or other similar entries in advanced courses which have a bearing on the student's field of specialization should submit a written evaluation or letter grade by the instructor in each such course and scores on the Graduate Record Examination. Applicants for graduate programs in accountancy and business administration should use the Admission Test for Graduate Study in Business instead of the Graduate Record Examination.

Prospective students are urged to apply for admission as early as possible, preferably in November or December for the summer and fall terms, September or October for the spring term. Under no circumstances will applications be accepted during the two weeks preceding the beginning of a semester.

Application forms may be obtained from the major department or the Graduate College (330 Administration Building, Urbana

61801). A nonrefundable application fee of $20 must accompany the application.

Foreign applicants must submit official records of all higher educational training, including certificates of degrees, with the dates the degrees were conferred. Eligible applicants whose native language is not English must also take the Test of English as a Foreign Language (TOEFL) given several times a year throughout the world. Applicants should make arrangements directly with the Educational Testing Service, Box 899, Princeton, New Jersey 08540, U.S.A. Foreign applicants must also submit evidence of financial support as a condition of admission.

Notices of Admission

Each student offered admission into a graduate department is admitted as either a degree candidate or a nondegree student. Following admission, the Office of Admissions and Records issues a Notice of Admission to the student. This notice allows the student to begin studies in a specific term, such as fall 1978. Applicants desiring a change in this term of entry are required to file another application and pay the application fee, unless the major department formally requests the Office of Admissions and Records to issue a new notice without requiring a new application. An exception to this rule is that a Notice of Admission for the summer session, if not marked "Summer Only," is valid for the following fall semester, and a Notice of Admission for the fall semester is also valid for the preceding summer session.

Specific conditions of admission may be noted on the Notice of Admission and, when needed, explained further in communication from the major department. Admitted students may be placed on limited status if their preadmission grade-point average is below the Graduate College minimum. Major departments may also admit students on limited status on the basis of other deficiencies. Students admitted on limited status should have a clear understanding with their major department concerning what conditions must be satisfied to qualify for a change from limited to full status. The major department should request the Graduate College Records Office to change the student from limited to full status once the specific conditions have been satisfied. No student can receive an advanced degree while on limited status.

The Notice of Admission may also indicate transcripts which are still outstanding. All admitted students are required to provide complete credentials to the Office of Admissions and Records prior to the beginning of their second semester of registration or such regis-

tration will not be permitted. Newly admitted students should bring their Notice of Admission with them the first time they go through registration.

ENROLLMENT PATTERNS

All campus students enroll in one of two enrollment patterns: (1) continuous — enrollment is expected in the fall and spring terms with summers optional; or (2) summers only — enrollment is expected only in the summer term. Once established, the pattern of enrollment may not be broken without prior approval from the Graduate College for a leave of absence or a change of enrollment pattern. Graduate students who break their patterns of enrollment without prior approval must apply for readmission in order to resume their studies.

NONDEGREE STATUS

Persons who desire to engage in graduate-level study but who do not plan to pursue a graduate degree may apply for admission as nondegree graduate students. The same minimum admission standards apply as for degree candidates. Qualified nondegree applicants are admitted to take courses on a part-time basis subject to the availability of space. Once accepted for admission by a department and the Graduate College, a nondegree student has the same enrollment pattern options for continuous registration as a degree candidate. Either the major department or the Graduate College, however, may discontinue the nondegree status of a student at the end of any term. Failure to register in a fall or spring term after admission necessitates reapplication should later enrollment be desired.

There are several restrictions which apply to nondegree status. Nondegree students:

1. Are not eligible to advance enroll.
2. Cannot register until after the third day of classes of the fall or spring semester.
3. Are required at the beginning of each semester to have approval of both their home department and the department offering the course in which the nondegree student wishes to enroll.
4. Are limited to taking less than 3 units per semester.
5. Are not eligible for financial aid administered by the Graduate College.
6. Must reapply if they wish to acquire degree status. If later approved for degree status, a maximum of 3 units of nondegree credit may be applied to a degree, and then only after successful petition to the Graduate College.

Nondegree students who wish to study only during the summer session are not assigned to a particular department, but carry an unassigned status with the Graduate College. These students are allowed to register continuously from summer to summer until their pattern of enrollment is broken.

REGISTRATION

The actual registration period occurs during the week preceding the start of instruction in any term. At this time, new students and continuing students complete their registration. New and other students who have not advanced enrolled should meet with their advisers and make up their schedules before going through registration.

There is a $15 fee for late registration. If, however, failure to complete registration during the regular period is in some way the fault of the University or there are extenuating circumstances such as severe illness or hospitalization, a student may petition the Records Office of the Office of Admissions and Records, 69 Administration Building, for a waiver of the fee.

TUBERCULOSIS CONTROL

All new, transfer, and readmitted students are encouraged to present evidence of freedom from tuberculosis at the University's McKinley Health Center. Proof of freedom from tuberculosis is necessary for some students, such as new teaching assistants and those who have jobs handling food. International students are required to have a chest X-ray at the Health Center before completing registration. Freedom from tuberculosis is established by presenting evidence in the form of a University of Illinois or public health agency certificate dated within the previous twelve months, or by undergoing a tuberculin skin test at the McKinley Health Center, to be read at the Health Center within forty-eight to seventy-two hours after application.

TUITION AND FEES

Since tuition and fees are subject to change, it is difficult to provide exact information. Tuition and fees are assessed on the basis of a student's status (resident or nonresident of Illinois), college of enrollment, and the number of credit hours he or she is taking each term. In computing fees, 1 unit is equivalent to 4 semester hours. A complete schedule of fees and explanation of the eligibility requirements for full or partial exemption are available from the Tuition and Fee Assessment Section, 69 Administration Building, Urbana 61801.

Residency for Tuition Assessment

Tuition is assessed on the basis of whether a student is a resident or nonresident of the state of Illinois in accordance with the *University of Illinois Regulations Governing the Determination of Residency for Admissions and Assessment of Student Tuition.* These regulations are published in the *Code on Campus Affairs and Regulations Applying to All Students,* which is offered to all students at registration. The residency regulations and petitions for changing a student's status are available on request from the Office of Admissions and Records, 177 Administration Building.

Generally, in order to be considered a resident for purposes of assessment of tuition, a person must have been a bona fide resident of the state of Illinois for at least six consecutive months immediately preceding the beginning of any term for which he or she registers and must continue to maintain a bona fide residency in Illinois. Any student who has at least one parent who is a bona fide resident of Illinois, and the student resides with the parent(s) or elsewhere in Illinois, will be regarded as a resident student.

Staff members of the University and allied agencies, including teaching and research assistants on appointment for at least 25 percent of full-time services, as well as their spouses and dependent children, are treated as residents for tuition assessment purposes as long as they hold their appointments. Professional staff and teachers in private or public elementary and secondary schools in Illinois are also eligible for in-state tuition charges. A student who is a U.S. citizen or a permanent resident may qualify for resident status if he or she is married to a resident of Illinois who meets all the requirements of the residency regulations.

Installment Plan for Payment of Tuition, Fees, and Housing Charges

Students enrolled on campus may arrange during the registration period to pay tuition, fees, and University residence hall charges (single-student housing only) on an installment basis. This plan does not apply to registration in extramural and correspondence courses. Tuition, fees, and residence hall charges for the first and second semesters are collected in four installments, the first of which is payable at registration and the others in each of the following months.

Students paying tuition and fees in installments are assessed a $2 service charge, but there is no service charge for installment payment of housing accounts. Arrangements for paying housing accounts on the installment plan can be made when the housing contract is signed or during registration. A modified plan for the payment of University charges on an installment basis may change these arrangements.

Refunds

Tuition and fees paid by a student who withdraws before the first day of instruction of a semester will be refunded in full. If withdrawal occurs during the first ten days of instruction of a semester, or the first five days in the summer session, tuition and fees will be partially refunded. The University will retain one-half of the service fee and all of the hospital-medical-service fee (or $30, whichever is greater) so that health services and insurance for the student will continue until the end of the semester. The last day for this partial refund is noted in the Graduate College Calendar and in the calendar printed in each semester's *Timetable.* Special refunds are provided for students who withdraw for military service after this ten- or five-day period. If it is necessary to withdraw after this period for some reason other than military service and there is a question concerning eligibility for a refund, a student should first inquire in the Graduate College Records Office, 321 Administration Building.

FINANCIAL AID

Financial aid is available in the form of fellowships, tuition and fee waivers, teaching and research assistantships, college work-study programs, and loans.

Application Procedure for Fellowships, Assistantships, and Tuition and Fee Waivers

A single Application for Graduate Appointment submitted to the student's major department ensures consideration for fellowships (except those awarded in national competitions), tuition and fee waivers, and departmental assistantships. To be considered for these appointments, new students should complete the Combined Application for Admission to the Graduate College and Application for Graduate Appointment. The Graduate College administers most of the fellowship and waiver awards. Financial need is not a factor in awarding fellowships, tuition waivers, or assistantships administered by the University. Applications for Graduate Appointment can be obtained from the Graduate College, 330 Administration Building, Urbana 61801, or from any graduate department.

To be considered for most fellowships beginning with the summer session or fall semester, students must file applications with their major department no later than February 15, and preferably earlier. (Some departments have deadlines earlier than February 15.) While departments may, at their discretion, accept applications for assistantships and tuition and fee waivers after the February 15 deadline, most departments attempt to make their financial aid decisions in February and March. Departmental committees recommend students

for fellowships or tuition and fee waivers to the Graduate College for approval. Each department appoints its own teaching or research assistants with the approval of the Graduate College. Fellowships can be awarded only to students who are enrolled in, or have applied for admission to, the Graduate College as degree candidates. The first list of fellowship awards is usually announced in mid-March.

Fellowships

University Fellowships. Students in all fields of graduate study are eligible to compete for University Fellowships, which are awarded on the basis of academic and scholarly achievement. A student need not be a U.S. citizen to apply. Under a new policy, departments (with Graduate College approval) may combine University Fellowship stipends with teaching or research assistantship appointments. Students should consult their departments about the pattern of available support.

Graduate College Fellowships. These fellowships are offered to students in all fields who show potential for success in graduate study, but who may have deficiencies in their undergraduate preparation. Graduate College Fellowships are generally awarded to students who are beginning graduate work so that they can devote their first year entirely to study. The stipend is $2,500 for the academic year plus $500 for an optional summer, with tuition and fees waived.

Most Graduate College fellows are given support in the form of other fellowships and assistantships with which to continue their studies in subsequent years, provided their progress is satisfactory during their first year, although continued support cannot be guaranteed in advance. Graduate College permission is required for concurrent employment of any type.

Industrial, Endowed, and Special Fellowships and Traineeships. A number of firms, foundations, and individuals support fellowship awards for graduate students. The stipends and supplemental allowances for these fellowships vary, and most of them are restricted to students in particular areas of study. In almost all cases, these awards provide tuition and fees. Information on applying for these fellowships and traineeships may be obtained from the Graduate College Fellowship Office, 305 Administration Building, Urbana 61801.

Federal Fellowships. Federal fellowships have been curtailed sharply in recent years, but certain programs, principally in science and education, have been maintained. Applicants for most federal fellowships must be U.S. citizens or permanent resident aliens, and some programs are restricted to U.S. citizens.

Fellowships Awarded in National Competition. Various kinds of fellowships are granted in rigorous national competitions, and in most cases these

may be used at the college or university chosen by the recipient. Applications for most of these awards are obtained from and submitted directly to the granting agencies.

Approximately five hundred National Science Foundation Fellowships are awarded annually to exceptional students in science and engineering, the social sciences, and in history and philosophy of science. These fellowships are restricted to students who have completed not more than one year of full- or part-time graduate study. They will be continued for up to three years, subject to the availability of funds and the recipient's satisfactory progress.

Danforth Graduate Fellowships go to highly qualified students committed to careers in college teaching. One hundred of these fellowships are awarded each year, with about one-quarter going to persons from minority groups. Renewable for up to four years, these awards are tenable at the university of one's choice.

A few other foundations and agencies also hold fellowship competitions, but on a smaller scale and usually restricted to specific groups.

Assistantships

General Information. The various departments of the University appoint graduate students as teaching or research assistants. Application should be made directly to the appropriate department, using the Application for Graduate Appointment. Assistants holding appointments ranging from 25 through 67 percent time are exempt from tuition and the service fee, but not from the HMS fee. For students holding such appointments or fellowships covering tuition and fees through the second semester, the tuition and service fee exemption generally extends through the summer session. Students who receive an additional appointment for the summer session should consult with the fee assessor to ascertain if their tuition and fee exemption will be effective. As an additional benefit, spouses and dependent children of staff members having an appointment of at least 25 percent are treated as residents for purposes of tuition assessment. Students may also apply for part-time assistantships outside their major department in one of the nonteaching units of the University, such as the Survey Research Laboratory.

Part-time appointments as student residence hall advisers are available as well. These jobs provide room and board and the same exemption from tuition and the service fee accorded to other assistants. The student affairs coordinator for staff development in the Housing Division, 200 Clark Hall, Champaign 61820, has applications for residence hall adviser appointments.

Resignations. Students who resign their appointments before working

for at least three-fourths of the term (ninety-one days during the regular semesters, forty-one days during the summer session) will be assessed tuition and fees, unless they withdraw from the University or file a clearance form for graduation within one week following the date of resignation. A term is defined as running from the first day of registration through the last day of final examinations.

Tuition and Fee Waivers

In addition to the tuition and fee waivers which accompany fellowships and assistantships, a number of waivers are awarded each year. These waivers provide exemption from the tuition and service fee (but not from the HMS fee) for the academic year and the summer session immediately preceding or following that year. To hold a waiver, a student must register for at least 3 units each semester during the academic year and 1½ units in the summer session. While holding a waiver, he or she may accept part-time or incidental employment not to exceed twenty hours per week either with the University or with outside agencies.

Veterans who meet certain residence requirements may be eligible for exemption from tuition under the state statute concerning military scholarships.

Loans and College Work-Study

Students may request information about National Direct Student Loans, state and federally guaranteed loans, and College Work-Study from the Office of Student Financial Aids, 420 Student Services Building, Champaign 61820.

Student Employment

Part-time jobs are sometimes available for graduate students through the Office of Student Financial Aids, Student Employment Division.

GRADUATE COLLEGE REQUIREMENTS

Graduate Degrees

The University of Illinois at Urbana-Champaign is a comprehensive graduate institution offering graduate degrees in more than 100 fields of study. In addition to the A.M. or M.S. and Ph.D. degrees offered in many disciplines, a number of departments offer work leading to other graduate degrees. Among these are masters' and doctoral degrees in professional and performing arts fields and a number of master's degrees in teaching (M.A.T. and M.S.T.).

Descriptions of these degrees are given in the appropriate depart-

mental sections of this *Graduate Programs* catalog. More detailed descriptions of graduate programs and the requirements for the degrees may be obtained from these individual departments.

The following are the general requirements of the Graduate College. The *Handbook for Graduate Students,* which is distributed to all graduate students enrolled at the University of Illinois at Urbana-Champaign, gives the requirements in more detail. Graduate students should use it as the official statement of Graduate College regulations during their graduate study on the Urbana-Champaign campus. Departments may have requirements that apply in addition to those of the Graduate College. A departmental standard higher than that of the Graduate College (e.g., the minimum grade-point average for admission) replaces the Graduate College standard.

Departmental and Graduate College policies and requirements change from time to time, and may not be immediately reflected in handbooks and other publications. New degree requirements, however, cannot be imposed on continuing graduate students. If degree requirements are changed, continuing students may complete their degree programs under the regulations in effect at the time of their initial admission and enrollment in the Graduate College. They have the option, however, of electing to be governed by the new requirements if they so desire.

A graduate student will not be awarded more than two graduate degrees from the University of Illinois at Urbana-Champaign without approval from the Graduate College.

Requirements for the Master's Degree

The Graduate College requires a minimum of 8 units of credit for the master's degree. At least 3 units must be in 400-level courses, and 2 of these 3 units must be in the major field. Half or more of these units must be earned in courses meeting on the Urbana-Champaign campus, or in courses meeting in other locations and approved by the Graduate College for residence credit. Master's degrees are conferred in May, August, October, and January. Master's candidates must complete all degree requirements, under normal circumstances, within five years after their first registration in the Graduate College.

Some departments require a final examination for the master's degree. Individual departments also determine master's degree thesis requirements. Some departments require or recommend a thesis, but others ask for a "substantial research paper," or only require the minimum 8 units of course work. Thesis credit is earned in courses numbered 499 in each department. No more than 3 units of 499, and only 2 units in some departments, can be applied to the master's degree.

Requirements for the Doctoral Degree

Credit and Residence. Doctoral programs are divided into three stages, as described below, and must include a minimum of 24 units of credit. At least 16 of the units, including thesis credit, must be earned in courses meeting on the Urbana-Champaign campus, or in courses meeting in other locations which have been approved by the Graduate College for residence credit. After the residence requirement has been fulfilled, a student may petition the Graduate College for permission to register in absentia for thesis credit.

Stage I — The master's degree or its equivalent (8 units, or 32 semester hours, of acceptable graduate work at this or another university).

Stage II — One or more additional years devoted to course work and research in preparation for the preliminary examination, and fulfillment of the department's special requirements, if these have not been satisfied earlier. Each department has a procedure for evaluating a student's progress toward the doctorate. This evaluation, whether by examination or other formal review, results in a decision as to whether or not a student is making satisfactory progress. This decision will be communicated in writing to the student and to the Graduate College. Such evaluation will take place no later than the end of the second year after a student enters the Graduate College. In some departments, this evaluation may take the form of a qualifying examination which a student must pass before entering Stage II of a doctoral program. Passing the preliminary examination marks the end of Stage II.

Stage III — Research and other activities culminating in an approved dissertation and final oral examination. Continuous registration, excluding summer sessions, must be maintained until a student has completed the credit requirement for the doctoral degree. If a student at this stage cannot maintain continuous registration, he or she must apply for readmission in order to continue doctoral study. Registration in 499 (thesis credit) is also required for the term in which a student takes the final examination, regardless of when the thesis will be deposited with the Graduate College or when the degree will be conferred.

Foreign Language Requirement. Each department establishes its own foreign language requirement; some allow for substitution of research skills in computer programming language and statistical analysis.

Preliminary and Final Examinations

Preliminary examinations taken at the end of Stage II of doctoral programs may be oral, written, or both, depending on the department's policy. Final examinations are oral and public.

The dean of the Graduate College appoints doctoral committees, at departmental request, to administer preliminary and final examinations. These committees must be composed of three or more faculty members. All faculty members with the rank of assistant professor or above are eligible for appointment, but the committee's chairperson and a majority of its members must be members of the graduate faculty. The principal director of dissertation research need not be a member of the graduate faculty.

Decisions of the committees for both preliminary and final examinations must be unanimous. Departments outline their policies regarding preliminary and final examinations as part of the descriptions of their advanced degree programs and requirements which are distributed to graduate students in the department.

Theses

All candidates for the Ph.D. and candidates for most other doctoral degrees are required to submit a thesis. Individual departments may have special requirements for the thesis. In addition, all completed theses must be acceptable for deposit in the Graduate College; a thesis that fails to meet Graduate College standards will be rejected. A thesis with joint authors is unacceptable to the Graduate College.

Before the degree is conferred, a student may find it desirable or expedient to publish some of the findings which will later be incorporated in the thesis. If this is done, an appropriate acknowledgment of the earlier publication should be included in the thesis. The Graduate College encourages such publication, but the thesis may not be published in its entirety before all degree requirements have been met.

If thesis research involves the use of human subjects, warm-blooded animals, the use of hazardous materials or procedures, or the utilization of PLATO services, the student must comply with the University's policies and procedures governing such work.

The Graduate College cannot accept a thesis if it is accompanied by a request to remove it from public view, and it will deny any request to remove from public view a thesis which has already been accepted.

Advanced Certificate

Several colleges and schools offer an advanced certificate for those interested in professional training beyond the master's degree, but

who are not interested in obtaining the doctorate. Usually an advanced certificate program requires 8 units of course work beyond the master's degree.

Grading System

Final Grades. Final grades for courses are recorded as follows: A, B, C, D (lowest passing grade), and Ab or E (failure). The grade-point average (GPA) is computed on a five-point scale with A = 5.0. Plus and minus signs do not appear on a graduate student's official transcript and are not used in computing the GPA, but they may be recorded on departmental records.

Other symbols used, but not included in the computation of the GPA, are:

W — Officially withdrawn from a course.

Ex — Temporarily excused. The symbol is recorded when the instructor has granted an extension of time to a student who has not completed the final examination or other requirements for the course. An excused grade must be replaced by a letter grade no later than the end of the next semester in which the student is enrolled. Failure to complete the work within this time automatically results in a grade of E. If the student does not enroll the following term, the excused grade becomes an E after one calendar year.

Df — Grade temporarily deferred. Used only in research and other approved courses which extend beyond one semester. The time limit for the Df grade to revert to E is the same as for the Ex grade, except in the thesis research course (499).

S or U — Satisfactory or unsatisfactory. Used as final grades only in the thesis research course (499) and in certain other approved courses.

Cr or Nc — Credit or no credit. Used only if students have registered for a course under the credit–no credit option with the approval of their major departments.

Ab — Absent from the final exam without an acceptable excuse. This grade counts as a failure.

Credit–No Credit Option. Subject to the restrictions of their major department and with their adviser's approval, students may register for graduate credit under the credit–no credit option. They must, however, have at least 2 units of course work in their graduate program with grades of A through C for every unit of credit–no credit work.

GPA Computation. The GPA is computed at the end of every term and

includes units of course work with grades of A through E and Ab, but not units with grades of Cr, Nc, Ex, Df, S, U, units of work completed elsewhere, or courses taken for credit in semester hours. If a grade below C is received, students should consult their advisers to determine if the course must be repeated. Repetition of a course does not eliminate the low grade from the transcript or from the computation of the GPA.

Minimum GPA's. Students are required by the Graduate College to maintain a minimum GPA of 3.75 in order to continue in an advanced degree program. Many departments, however, demand a minimum of 4.0 or higher, and when they do, their minimum becomes the minimum enforced by the Graduate College.

Students who complete 4 or more units of work with an average of less than the minimum will receive a warning letter from the Graduate College. If, after the completion of 4 additional units, a student's GPA has not been raised above the required minimum or if the GPA falls below it at any time thereafter, the student will be disqualified as a degree candidate.

Advisers and departments take factors other than satisfactory grades into consideration in determining qualifications for advanced degrees. An adequate GPA does not in itself ensure continuance in an advanced degree program. Records maintained by departments often include deferred and plus and minus grades as well as written evaluations by instructors. These factors, along with other skills and aptitudes, are taken into consideration in departmental decisions about permitting students to continue in master's and doctoral programs.

Credit

Graduate Credit. Graduate credit at the University of Illinois at Urbana-Champaign is measured in terms of units, with 1 unit equal to aproximately 4 semester hours. Generally, courses in the 300 series carry either graduate or undergraduate credit and are open to both graduate and undergraduate students. Courses in the 400 series, with the exception of some courses (e.g., foreign language), carry graduate credit, and enrollment in these courses is restricted to graduate students.

Proficiency Examinations. Credit earned by passing proficiency examinations cannot be applied to the requirements for advanced degrees, but such examinations may be taken to fulfill prerequisites for more advanced courses or to demonstrate competence in areas considered important to a student's area of study. Proficiency examinations will be recorded only if the student is registered at the time of the examination.

Credit for Work Completed Elsewhere. Students who have completed graduate work elsewhere but have not received advanced degrees may request that credit earned for that work be applied to a degree at the University of Illinois at Urbana-Champaign. Requests for acceptance of such credit may be submitted on petition forms accompanied by official transcripts, after the student has successfully completed at least 2 units of graduate work on the Urbana-Champaign campus. Credit applied toward a completed master's degree at the University of Illinois or another institution cannot be used as partial fulfillment of the requirements for a second master's degree. If a student has earned a master's degree at another university and then gone on to do additional course work before enrolling at the University of Illinois at Urbana-Champaign, that student may petition to have credit for the additional work transferred. Students who have received a master's degree are considered to have completed the first stage of their doctoral program unless their department stipulates otherwise. It should be noted, however, that all doctoral candidates, regardless of transfer credit or a master's degree completed elsewhere, must complete 16 units in residence on the Urbana-Champaign campus, or in courses meeting in other locations which have been approved by the Graduate College for residence credit.

Research Credit and 499. The time devoted to research is recorded by registration in 499 (thesis credit) or in 400-level courses with such titles as "Independent Study" or "Special Topics." Registration in 499 indicates that the student's research is expected to result in a thesis in partial fulfillment of the requirements for a master's or doctoral degree. Therefore, all students registering in 499 should do so only with full departmental approval.

Extramural Courses. Graduate courses are offered by members of the University faculty at various centers throughout the state. Pamphlets listing these courses can be obtained through the Office of Continuing Education and Public Service, 101 Illini Hall, Champaign 61820. Certain extramural courses may be considered as work in residence, if they have been approved for residence credit by the department offering the course and by the Graduate College. Such extramural courses are designated by an R preceding the course number. Credit earned in extramural courses can be applied toward an advanced degree only if the courses are approved in advance by the adviser and constitute part of a well-integrated program. At least half of the minimum units required for a master's degree must be earned in courses meeting on the Urbana-Champaign campus or in courses with an R designation. Credit from extramural courses not approved for residence credit cannot be applied to the second stage of a doctoral program.

Correspondence Courses. Credit from correspondence courses cannot be applied towards an advanced degree but can be used to fulfill prerequisites or remove deficiencies. A list of correspondence courses is available from the Office of Continuing Education and Public Service, 104 Illini Hall, Champaign 61820.

PROGRAMS OF STUDY

The graduate programs offered by the Graduate College, through the various divisions, schools, institutes, centers, and departments of the University of Illinois at Urbana-Champaign, are described on the following pages. Areas of specialization within these programs are described. Included also are the offerings of several interdisciplinary areas of concentration such as population studies, environmental studies, American civilization, and African, Asian, Russian, and Latin American area studies, among others.

The minimum requirements for admission and other requirements for graduate degrees are given for each program. The prospective student is reminded that he or she is seeking admission to the Graduate College of the University of Illinois at Urbana-Champaign, and may not be admitted to the college or to a particular academic department offering programs leading to advanced degrees without satisfying the admission requirements of both. Likewise, both departmental and Graduate College requirements must be met before an advanced degree is awarded by the University of Illinois. If departmental requirements are higher than the minimum Graduate College requirements, e.g., for continuation in a graduate degree program and the awarding of the degree, the higher standard applies.

The University of Illinois at Urbana-Champaign *Courses Catalog,* published biennially, lists all the undergraduate and graduate courses offered at the Urbana-Champaign campus. A listing of courses offered each term is published in the *Timetable,* issued in April for the fall term, in March for the summer term, and in October for the spring term. Copies of the *Courses Catalog* and *Graduate Programs* catalog are for sale through the Illini Union Bookstore, 715 South Wright Street, Champaign 61820. The price by mail is $2 for each catalog. The *Timetable* is available free of charge at the Information Desk of the Illini Union. The graduate application for admission packet is available free of charge from the Graduate College, 330 Administration Building, Urbana 61801.

ACCOUNTANCY

Head and Director of Graduate Studies: N. M. Bedford

Correspondence and Information: Head of the Department of Accountancy, University of Illinois at Urbana-Champaign, 360 Commerce Building (West), Urbana, Illinois 61801

FACULTY

Professors: N. M. Bedford, G. D. Brighton, P. E. Fess, H. P. Holzer, O. E. Johnson, J. C. McKeown, F. L. Neumann, K. W. Perry, H. M. Schoenfeld, C. H. Smith, W. E. Thomas, V. K. Zimmerman

Associate Professor: R. E. Flaherty

Assistant Professors: M. H. Berry, R. J. Boland, J. L. Boyd, W. M. Lemon, S. H. Park, R. D. Picur, J. J. Schultz, R. E. Verrecchia, E. Willis, S. Yu, R. E. Ziegler

Graduate Degree Programs. The Department of Accountancy offers graduate work leading to the degrees of Master of Accounting Science and Doctor of Philosophy in Accountancy. For graduates of business schools with credit in appropriate undergraduate courses, the M.A.S. degree requirements can be completed in one year. For nonbusiness graduates, the M.A.S. can be earned in two years. The Ph.D. degree takes approximately three years of full-time study and research.

Admission. All applicants, native or foreign, are required to take the Graduate Management Admission Test. This test should be taken early enough to ensure that the results will be available to the department prior to action on admission. The admissions requirements of the Graduate College also apply.

Master of Accounting Science. All candidates take three specified graduate-level courses in accountancy. No thesis is required, although the student may elect to write one. In addition, graduate courses in microeconomic theory, operations research, and organization theory must be taken if such courses were not taken in prior academic work.

A candidate with an undergraduate background in accounting is required to complete at least 8 units of work, 4 of which must be in accountancy. Such a student should have completed an equivalent of the undergraduate curriculum at the University of Illinois at Urbana-Champaign including the following: 21 hours of undergraduate work in accounting; introductory courses in economic theory, in computer programming and applications, and in the functional fields of business; two courses in statistics; and courses in finite mathematics and calculus.

A student with little or no business and accounting background is required to complete 16 units of work, or the equivalent. A first-year student takes four specified graduate courses in accountancy. Depending upon background, the student also enrolls in courses in statistics, economics, operations research, enterprise organization, finance, and marketing. A student who already meets some of the requirements of the two-year program may be given some credit toward the 16-unit requirement. Elective courses may be substituted in areas in which such a student satisfactorily demonstrates proficiency. In the second year the requirements for all M.A.S. students, as described above, are followed. Adequate provisions have been made for electives suited to the particular interests of both one-year and two-year M.A.S. students.

Doctor of Philosophy. Applications for admission to the doctoral program, supported by three letters of recommendation, must be approved by the department admissions committee, which may require an oral or written examination. The requirements for the Doctor of Philosophy degree include the following: credit in micro- and macroeconomics; two courses in statistics, one course in organization behavior, and two courses in research methods and techniques; a minor of at least 3 units other than accountancy; at least 6 units of accountancy; and additional units to bring the total to at least 24, including the 8 dissertation units. The student's doctoral program is determined in consultation with a faculty adviser. The student's tentative plans for the doctoral dissertation serve as a guide in planning the program.

In addition, the candidate must pass an oral and written preliminary examination and an oral final examination on the doctoral dissertation. In the preliminary examinations, the candidate must demonstrate a thorough knowledge of accounting theory in both its external and internal dimensions, of research methods, and of the areas of accountancy in which he or she specialized; a general acquaintance with the subject matter and bibliography of other areas of accountancy; and proficiency in a minor field and the required areas of economic theory, quantitative methods, and organization theory.

CENTER FOR INTERNATIONAL EDUCATION AND RESEARCH IN ACCOUNTING

The Center for International Education and Research in Accounting is functionally and administratively part of the Department of Accountancy. The center's objective is to foster the international development of education and research in the accounting discipline, to provide a base for the international exchange of ideas and materials, to carry out research programs of international interest, and to help accounting faculty and able students from other countries to come to the University of Illinois at Urbana-Champaign for study and research in accountancy. The staff of the center, composed of outstanding teachers and researchers from foreign countries, conduct seminars and courses for graduate credit.

Inquiries concerning the center should be directed to Professor V. K. Zimmerman, Director, Center for International Education and Research in Accounting, University of Illinois at Urbana-Champaign, 320 Commerce Building (West), Urbana, Illinois 61801.

ADVERTISING

Head of the Department: A. M. Barban
Correspondence and Information: Head of the Department of Advertising, University of Illinois at Urbana-Champaign, 119 Gregory Hall, Urbana, Illinois 61801

FACULTY

Professors: A. M. Barban, N. Wedding
Associate Professors: J. E. Haefner, K. B. Rotzoll, G. E. White
Assistant Professors: J. D. Leckenby, S. F. Tinkham

Graduate Degree Program. The Department of Advertising offers graduate work leading to the Master of Science degree. For the program leading to the Doctor of Philosophy in Communications, see page 76.

Admission. Admission to graduate study in advertising requires completion of the requirements for a bachelor's degree in an accredited institution of recognized standing. All applicants are required to submit results from either the Graduate Record Examination or the Graduate Management Admission Test and are required to attach to their applications a short essay indicating why they want to take graduate work in advertising. The Graduate College admissions requirements also apply.

Master of Science. Candidates for the M.S. degree must complete at least 9 units, of which at least 4 are 400- or 500-level courses. These will include at least 5 units of course work in advertising, including Advertising 481, 482, and either 483 or 484. A minimum of 2 units must be taken outside the Department of Advertising. Students with an undergraduate major in advertising can usually earn the M.S. degree in one academic year and one summer session if they take a full course of study. Applicants without an undergraduate major in advertising may be required to take up to 14 units of graduate work. At the time of admission, students will be advised of the probable number of units required for graduation. At the time of registration advising, students will be informed of the exact number of units needed to fulfill the M.S. requirements.

AERONAUTICAL AND ASTRONAUTICAL ENGINEERING

Head of the Department and Director of Graduate Studies: H. H. Hilton
Correspondence and Information: Director of Graduate Studies, Department of Aeronautical and Astronautical Engineering, University of Illinois at Urbana-Champaign, 101 Transportation Building, Urbana, Illinois 61801

FACULTY

Professors: C. E. Bond, H. H. Hilton, C. O. Hopkins, H. W. Knoebel, Y. K. Lin, R. W. McLoy, A. I. Ormsbee, S. N. Roscoe, R. A. Strehlow, S. M. Yen, A. R. Zak
Associate Professors: H. O. Barthel, H. Krier, J. E. Prussing, L. H. Sentman, K. R. Sivier

Graduate Degree Programs. The Department of Aeronautical and Astronautical Engineering offers graduate programs leading to the degrees of Master of Science and Doctor of Philosophy. Study and research are planned to prepare graduates for fundamental and applied work in airplane, missile, and space flight engineering. Students interested in mass transportation and deep-sea submergence vehicles, for example, find graduate study in this department applicable. Typical areas of concentration are aerodynamics, aeroelasticity, space mechanics, flight mechanics, propulsion, structural mechanics, optimization and control, manual control and display systems, human factors in aerospace systems, and air and noise pollution.

Admission. The prerequisite for graduate study normally is the equivalent of the undergraduate courses required at the University of Illinois for a bachelor's degree in aeronautical and astronautical engineering; however, graduates of curricula leading to degrees in other fields of engineering, the physical sciences, or mathematics may also be admitted to advanced study.

Master of Science. Candidates for the degree of Master of Science are required to complete a minimum of 8 units of graduate work, including a thesis. It is possible for a student with a one-half time appointment to complete the requirements for the M.S. degree in two semesters and a summer session, or in three semesters.

Doctor of Philosophy. Because of the wide range of interests in the field of aeronautical and astronautical engineering, there are no specific course requirements for a major in the program of study leading to the degree of Doctor of Philosophy. Each student plans a program in consultation with a departmental adviser. Courses offered by departments other than Aeronautical and Astronautical Engineering may be included in the major area of study when these courses are of particular value to the work which students desire to emphasize. The major and minor programs must meet with the approval of the head of the department. Minimum requirements for the degree consist of 8 units of course credit beyond the master's degree, successful completion of the preliminary examination, and a satisfactory thesis developed from 8 units of thesis research. A reading knowledge of one foreign language is optional. Students who do not elect the foreign language option must complete a minimum of 18 units of course work for the Ph.D.

AFRICAN STUDIES PROGRAM

Director of Graduate Studies: V. C. Uchendu
Correspondence and Information: Director of the African Studies Program, University of Illinois at Urbana-Champaign, 1208 West California Avenue, Urbana, Illinois 61801

FACULTY

Professors: C. Alexander, M. Davis, J. M. Due, J. F. Due, J. Harlan, C. Kim, C. Kisseberth, A. Peshkin, V. Uchendu, V. West, D. Wood, G. Yu
Associate Professors: R. Brown, A. Harms, J. Karr, C. Keller, Y. Scheven, R. Schoen, A. Sofranko, C. Stewart, C. Weller, B. Yates
Assistant Professors: E. Accad, E. Bay, E. Bokamba, R. Corby, A. Glaze, D. McHenry, R. Thompson

Graduate Programs. Graduate minors in African studies are administered by the director of the African Studies Program. African studies graduate programs complement and supplement major work which students carry out within their primary disciplines. Application for admission to graduate study should be made through the appropriate department.

Minor for the Master's Degree. A candidate for the master's degree who elects African studies as a minor must secure approval from the program and must complete at least 2 units of graduate credit from the courses approved by the program. Among the fields in which courses are available are: agricultural economics, anthropology, art history, comparative literature, economics, education, geography, history, linguistics, political science, and sociology.

Minor for the Doctor of Philosophy Degree. A doctoral candidate who elects African studies as a minor must secure approval from the program and must earn at least 4 units of graduate credit in approved courses in at least two departments. Courses are available in the fields listed above.

Financial Aid. Each year the program is generally able to assist a limited number of students financially through teaching assistantship awards. Some National Defense Foreign Language Fellowships are normally available for students in area studies at the graduate level.

AGRICULTURAL ECONOMICS

Head of the Department: Daniel I. Padberg

Correspondence and Information: Head of the Department of Agricultural Economics, University of Illinois at Urbana-Champaign, 57 Mumford Hall, Urbana, Illinois 61801

FACULTY

Professors: C. B. Baker, C. A. Bock, G. K. Brinegar, E. E. Broadbent, B. L. Brooks, F. Dovring, J. M. Due, D. E. Erickson, L. P. Fettig, F. C. Fliegel, H. D. Guither, H. G. Halcrow, J. H. Herbst, T. A. Hieronymus, L. D. Hill, R. A. Hinton, G. G. Judge, A. G. Mueller, D. I. Padberg, F. J. Reiss, J. W. Robinson, J. R. Roush, S. C. Schmidt, J. T. Scott, R. G. F. Spitze, E. R. Swanson, R. N. Van Arsdall, V. I. West, S. W. Williams

Associate Professors: T. L. Frey, A. G. Harms, E. D. Kellogg, M. B. Kirtley, M. N. Leath, R. M. Leuthold, D. A. Lins, W. D. Seitz, D. G. Smith, A. J. Sofranko, J. C. van Es, M. M. Wagner

Assistant Professors: D. M. Conley, B. L. Dixon, T. E. Elam, P. Garcia, D. L. Good, D. A. Myers, K. E. Nelson, S. T. Sonka, D. L. Uchtmann

Graduate Degree Programs. The Department of Agricultural Economics offers courses leading to the Master of Science and Doctor of Philosophy degrees. Areas of concentration and specialization are offered in agricultural finance, agricultural and food policy, farm management and production economics, international agricultural economics, marketing and agricultural prices, quantitative and research methods, resource economics and rural development, and rural sociology.

Master of Science.

Admission. Graduate College admissions requirements apply. Applicants are favorably considered for admission if they are adequately prepared for advanced study as demonstrated by their previous program of study and their scholastic record. Students having less than 12 semester hours of agricultural economics or economics may be required to take additional courses to adequately prepare themselves for graduate studies. Students who desire to specialize in rural sociology should have had a minimum of 6 semester hours of sociology.

The minimal 8-unit program must include 2 units of economics, at least 1 of which must be economic theory; 4 units of agricultural economics, including thesis credit; and 2 units of open electives. At least 3 units must be in 400-level courses, 2 of which must be agricultural economics. No more than 2 units of thesis credit may be included in the 8-unit program. The required thesis may be waived under certain circumstances. Each student is examined orally on the thesis and/or a general knowledge of his or her field to determine his or her qualifications for the master's degree.

Doctor of Philosophy.

Admission. Graduate College admissions requirements apply. Applicants with a master's degree in agricultural economics or a closely related discipline with an outstanding scholastic record are favorably considered for admission.

The doctoral candidate must complete 8 units of nonthesis courses beyond the master's degree. The total graduate program must include a minimum of 3 units in economics, including 1 unit each of micro- and macro-theory, both at the 400 level, plus 2½ units in quantitative methods and research methodology. The student must pass three written and one oral preliminary examinations, submit an acceptable thesis, and pass a final oral examination.

Financial Aid. University Fellowships and tuition and fee waivers are awarded by the Graduate College. Several fellowships are also awarded on the basis of competition among graduate students studying in departments in the College of Agriculture. In addition, the Department of Agricultural Economics maintains a number of part-time positions (usually half-time) for graduate students, most of them in research. These assistantships are offered on a competitive basis among graduate students in the departmental program. For further information and a copy of the graduate program brochure, write to the address above.

AGRICULTURAL EDUCATION

Chairperson of the Agricultural Education Division, College of Education: Paul E. Hemp
Assistant Dean, College of Agriculture: Cecil D. Smith
Correspondence and Information: Division of Agricultural Education, University of Illinois at Urbana-Champaign, 110 Education Building, Urbana, Illinois 61801

FACULTY

Professor: P. E. Hemp
Associate Professor: R. W. Walker
Assistant Professors: B. E. Swanson, L. F. Hillen

Graduate Degree Program. The Master of Science program has been planned as a fifth year of work for students who have completed the requirements of the four-year agriculture curriculum for secondary teachers of agricultural occupations, or its equivalent.

Admission. The program is open only to students who have received a bachelor's degree and also have a teaching certificate. The Graduate College admissions requirements apply.

Master of Science. Candidates must earn 8 units: 4 units in agriculture, 2 units in education, and 2 units in electives, which may be in agriculture, education, or, in exceptional cases, in other fields.

A minimum of 4 units must be taken in residence. A maximum of 4 of the required 8 units may be earned in extramural courses offered by the University of Illinois at Urbana-Champaign; of these 4 units, no more than 2 may be in agriculture and no more than 2 may be in education.

In order to fulfill one of the objectives of this program, that of broad general training in technical agriculture at the graduate level, the agriculture courses and

electives must be selected with the approval of the adviser. In general, agriculture courses are selected from at least three subject-matter departments with no more than 3 units from any one department.

Advanced Graduate Degree Program. Students who wish to pursue work at the doctoral level with a major in agricultural education should review program descriptions and requirements listed for the Department of Vocational and Technical Education in the College of Education.

AGRICULTURAL ENGINEERING

Head of the Department: Frank B. Lanham

Correspondence and Information: Head of the Department, Department of Agricultural Engineering, University of Illinois at Urbana-Champaign, 202 Agricultural Engineering Building, Urbana, Illinois 61801

FACULTY

Professors: B. J. Butler, J. O. Curtis, D. L. Day, R. F. Espenschied, C. E. Goering, D. R. Hunt, D. G. Jedele, B. A. Jones, Jr., F. B. Lanham, W. D. Lembke, A. J. Muehling, E. F. Olver, H. B. Puckett, E. D. Rodda, G. C. Shove, J. C. Siemens, R. R. Yoerger

Associate Professors: L. E. Bode, C. J. W. Drablos, D. L. Hoag, W. R. Nave, D. H. Vanderholm

Assistant Professors: J. K. Mitchell, J. N. Scarborough, P. N. Walker

Graduate Degree Programs. The Department of Agricultural Engineering offers the Master of Science and Doctor of Philosophy degrees.

Master of Science. Admission requirements include completion of an undergraduate program equivalent to the agricultural engineering curriculum at the University of Illinois at Urbana-Champaign with at least a 4.0 grade-point average (A = 5.0) for the terms containing the last 60 semester hours of course work. Applicants whose native language is not English must present a TOEFL score of 550 or more. Students may concentrate study in one of the areas of research specialization listed below. Supporting course work includes mathematics; computer science; statistics; engineering mechanics; civil, electrical, and mechanical engineering; agronomy; food science; and other appropriate fields. The completion of 8 units and the preparation and defense of a thesis involving an analytical or experimental investigation (which satisfies 2 units of credit) are required of all M.S. candidates, except those able to document previous experience of an equivalent nature. Candidates permitted to pursue a non-thesis degree must complete a minimum of 9 units.

Doctor of Philosophy. Admission is limited to individuals who have demonstrated exceptional ability through outstanding performance in obtaining the Master of Science degree and/or through a high degree of technical and professional accomplishment. Candidates must also satisfy entrance requirements for the M.S. degree program.

Opportunities for study are found in all of the areas of specialization listed below. Candidates will be required to include course work and staff consultation from the various disciplines within the University to build strong technical programs and to fulfill the standard requirements of the Graduate College. There are no foreign language requirements; however, a high degree of competence may be required in areas associated with dissertation research, such as statistics, simulation, and computer programming.

Research Interests. Research opportunities are available in both the Agricultural and Engineering Experiment Stations. Students may specialize in power and machinery (soil dynamics, tillage, soybean production systems, pesticide application, operations

analysis, vehicle stability, and operator ride comfort); soil and water mechanics (hydraulics of structures, agricultural hydrology, drainage, irrigation, mechanics of erosion, and water quality); structures and environment (structural analysis and design, environmental control, livestock housing systems, and waste management); or processing (systems analysis for farmstead mechanization, crop conditioning and processing, solar energy applications, physical properties of agricultural products, and food engineering).

Financial Aid. Fellowships, supported both by University and by College of Agriculture funds, are available on a competitive basis. A limited number of assistantships, normally on a half-time basis, providing both teaching and research experience is available.

AGRONOMY

Head of the Department: Robert W. Howell
Correspondence and Information: Head, Department of Agronomy, University of Illinois at Urbana-Champaign, 214 Turner Hall, Urbana, Illinois 61801

FACULTY

Professors: D. E. Alexander, A. H. Beavers, R. L. Bernard, J. S. Boyer, C. M. Brown, A. W. Burger, S. G. Carmer, J. M. J. deWet, J. W. Dudley, J. B. Fehrenbacher, J. W. Gerdemann, D. W. Graffis, H. H. Hadley, R. H. Hageman, J. B. Hanson, J. R. Harlan, T. D. Hinesly, C. N. Hittle, A. L. Hooker, R. W. Howell, T. Hymowitz, J. A. Jackobs, R. L. Jones, E. L. Knake, D. E. Koeppe, L. T. Kurtz, R. J. Lambert, J. R. Laughnan, M. D. McGlamery, G. W. McKibben, D. A. Miller, W. L. Ogren, T. R. Peck, D. B. Peters, R. W. Rinne, W. O. Scott, R. D. Seif, F. W. Slife, G. F. Sprague, F. J. Stevenson, M. D. Thorne, W. M. Walker, L. M. Wax, L. F. Welch, J. M. Widholm, C. M. Wilson
Associate Professors: J. D. Alexander, C. J. Arntzen, C. W. Boast, J. E. Harper, J. J. Hassett, R. C. Hiltibran, R. G. Hoeft, W. H. Judy, C. J. Kaiser, E. B. Patterson, B. W. Ray, E. W. Stoller, E. J. Weber, J. T. Woolley
Assistant Professors: W. L. Banwart, M. A. Cole, J. J. Faix, I. J. Jansen, R. R. Johnson, H. C. Minor, E. H. Paschal, G. E. Pepper, R. A. Pope, R. S. Smith, J. W. Stucki

Graduate Degree Programs. The Department of Agronomy offers course work leading to the Master of Science and Doctor of Philosophy degrees. Great flexibility exists for planning programs in various areas, and no rigid curricula are prescribed. The following areas of specialization indicate the breadth of opportunities, although they are not mutually exclusive: biometry and data processing, crop ecology, crop evolution, crop production, environmental agronomy, environmental physics, international agronomy, pedology, plant breeding and genetics, plant cytogenetics, plant physiology and biochemistry, soil microbiology and biochemistry, soil chemistry and minerology, soil fertility, soil management, soil physical and colloidal chemistry, soil physics, water relations and management, and weed science.

Admission. Because of the diversity of programs in the Department of Agronomy, there is considerable variation in the preparation that is needed. Undergraduate training equivalent to that required at the University of Illinois for majors in agricultural science (plant or soil science), agronomy, crops, or soils is appropriate. For some programs greater emphasis is given to previous training in plant sciences, chemistry, geology, or mathematics. In all cases, previous experience or other significant evidence of serious interest in crops and/or soils is expected. A grade-point average of at least 4.0 (A = 5.0) in the last 60 semester hours of undergraduate work plus any graduate work completed is required. Applicants whose native language is not English must score at least 500 on the TOEFL examination.

Master of Science. A candidate must complete 8 units of graduate study as approved by his or her graduate advisory committee with a grade-point average of at least 4.0, and must present an acceptable thesis and pass an oral examination. At least 3 units must be at the 400 level, including at least 1 unit of course work other than Agronomy 499. An acceptable thesis is required, although the thesis may be waived by petition in unusual situations, and additional course work substituted. The master's examination is oral, although written examinations may be required at the option of the examining committee.

Doctor of Philosophy. A candidate must complete a minimum of 24 units of graduate study as approved by his or her graduate advisory committee with a grade-point average of at least 4.0, must pass an oral preliminary examination, and must present an acceptable thesis and pass a final oral examination, which consists of a defense of the thesis and examination on such other matters as members of the examining committee may select. Written examinations may be required at the option of members of the examining committees. At least 4 units of 300- or 400-level courses outside the Department of Agronomy are required. Residence requirements are the same as those of the Graduate College.

For the Ph.D., a student must demonstrate reading competence in French and German, or approved foreign language substitutes, or statisfactorily complete 1½ units or the equivalent of course work in lieu of each language. Students whose native language is not English may fulfill the requirement for one language with their native tongue.

Research Interests. Excellent laboratory, greenhouse, and field research facilities are available. A network of experimental locations throughout the state and cooperative arrangements with other states makes possible studies under a wide range of environmental and climatic conditions. The department's major involvement in international programs may provide opportunities to conduct thesis research abroad. Brochures are available upon request providing more detail about the graduate program and faculty research interests.

AMERICAN CIVILIZATION

Graduate Program. An interdisciplinary concentration in American civilization is available leading to the Master of Arts or Doctor of Philosophy degree. Students interested in this program enroll in the Department of History. Further information may be obtained from the School of Humanities or the Department of History.

ANIMAL SCIENCE

Head of the Department and Graduate Supervisor: D. E. Becker
Correspondence and Information: Head of the Department of Animal Science, University of Illinois at Urbana-Champaign, 57 Mumford Hall, Urbana, Illinois 61801

FACULTY

Professors: D. H. Baker, E. M. Banks, D. E. Becker, O. G. Bentley, D. J. Bray, J. E. Corbin, P. J. Dziuk, R. M. Forbes, U. S. Garrigus, P. C. Harrison, E. E. Hatfield, F. C. Hinds, A. H. Jensen, S. P. Mistry, H. W. Norton, B. A. Rasmusen
Associate Professors: W. W. Albert, D. H. Buck, W. F. Childers, S. E. Curtis, J. M. Lewis, J. R. Romans, G. R. Schmidt, B. A. Weichenthal
Assistant Professors: D. B. Anderson, J. M. Bahr, T. R. Carr, G. F. Cmarik, R. A. Easter, G. C. Fahey, Jr., D. J. Kesler, L. H. Thompson

Graduate Degree Programs. The Department of Animal Science offers graduate work leading to the Master of Science and Doctor of Philosophy degrees. Study and research may be pursued in the following areas of specialization: population and immunogenetics, physiology of reproduction including endocrinology, environmental physiology, animal nutrition, nutritional biochemistry, meat science and muscle biology, and world animal agriculture. Beef cattle, horses, poultry, sheep, swine, and a wide variety of laboratory animals are available for study.

Admission. The Graduate College admissions requirements apply. Courses in biological and physical sciences and in mathematics are essential preparation for graduate work in any specialized area of animal science. Candidates specializing in the areas of animal nutrition or nutritional biochemistry must have training equivalent to one five-hour course each in quantitative analysis and organic chemistry; a course in physical chemistry is strongly recommended. Candidates specializing in meat science should have undergraduate training in meat evaluation, use, and/or processing and in microbiology. Students lacking adequate background to register in graduate courses at the University of Illinois at Urbana-Champaign are expected to remove course deficiencies during the first year of graduate study. The department desires applicants with a strong undergraduate degree in animal science and with real promise of completing degree requirements in reasonable time.

Master of Science. The Master of Science in Animal Science may be completed with or without a thesis. Candidates are required to complete a minimum of 8 units of graduate work. At least 3 units must be in 400-level courses, 2 of which must be in animal science. No more than 2 units of thesis credit may be included in the program. Candidates are required to register in Animal Science 400, Seminar, during each semester of study.

Doctor of Philosophy. The doctoral candidate must complete at least 8 units of nonthesis courses beyond the M.S. degree. The program of study must include registration in Animal Science 400, Seminar, during each semester of study. The student must pass written and oral preliminary examinations administered by a committee of at least five faculty members, two of whom must be from outside the Department of Animal Science. The candidate must also complete 8 units of thesis research and submit an acceptable thesis. The final examination is limited to a presentation and defense of the thesis research.

ANTHROPOLOGY

Head of the Department: Eugene Giles
Director of Graduate Studies: F. K. Lehman
Correspondence and Information: Graduate Secretary, Department of Anthropology, University of Illinois at Urbana-Champaign, 109 Davenport Hall, Urbana, Illinois 61801

FACULTY

Professors: E. M. Bruner, J. B. Casagrande, C. E. Cunningham, E. Giles, H. A. Gould, D. C. Grove, D. W. Lathrap, F. K. Lehman, J. C. McGregor (emeritus), B. Nettl, D. W. Plath, D. B. Shimkin, V. C. Uchendu, N. E. Whitten, Jr., R. T. Zuidema
Associate Professors: D. S. Butterworth, C. M. Keller, H. M. Ross, J. O. Stewart
Assistant Professors: C. J. Bareis, J. W. D. Dougherty, W. L. Jungers, L. K. Klepinger, B. J. Peterson, W. E. Peterson, T. J. Riley, R. W. Thompson

Graduate Degree Programs. The Department of Anthropology offers course work leading to the Master of Arts and the Doctor of Philosophy degrees.

Admission. A student without the equivalent of this department's undergraduate concentration may be admitted to either degree program but will be required to make up any deficiencies in his or her background in anthropology. The Graduate College admissions requirements apply.

Master of Arts. The master's degree can be a first stage toward the doctorate or can be used by students wishing ultimately to apply a knowledge of anthropology in some related field. A candidate for the master's degree must accumulate at least 8 units of graduate credit and present an acceptable thesis or paper in lieu of thesis. The degree should be earned in not more than two years.

Doctor of Philosophy. The doctoral program is designed primarily to train scholars and teachers of the subject, but also increasingly to prepare professionals to work in nonacademic contexts. The master's degree is not required of all students going on to the doctorate. A candidate for the Ph.D. degree must earn at least 16 units of graduate credit, present a predoctoral research paper of substantially original content, and submit a dissertation research proposal before the preliminary examinations. Before those examinations, the student must demonstrate ability to use, for scholarly purposes, either one foreign language at a high level of proficiency or two with ordinary reading proficiency. The language(s), the level to be tested, or possible alternatives, will be determined by the student's advisory committee appointed early in the student's second year of residence.

Research Interests and Facilities. Courses and individualized study provide broad coverage of sociocultural, linguistic, archaeological, and physical anthropology. The department provides special emphases in the areas of agricultural origins and systems, analysis of symbolic systems, analytical osteology, primate evolution, cultural and human ecology and evolution, culture change and urbanization, ethnicity, medical anthropology and community health, and formal analysis and mathematical social anthropology. Faculty expertise includes the areas of East, Southeast, and South Asia; Oceania; Africa south of the Sahara; Mexico; South America and the Caribbean; and the United States. The department's Laboratory of Anthropology has constituent archaeological, pollen-analysis, ethnographic, and human biology laboratories. The department is the headquarters of the Illinois Archaeological Survey and offers summer field school training in archaeology. Departmental funds are available for graduate student summer field research. Graduate student programs are enriched by close departmental relationships with the interdisciplinary area studies centers on campus: Africa, Asia, Latin America and the Caribbean, Russia and East Europe, and the Afro-American Academic Program. Students have access to the extensive computer facilities of the University through the Social Science Quantitative Laboratory. The *Journal of the Steward Anthropological Society,* edited by graduate students, has been published continuously since 1969.

ARCHITECTURE

(Including Architectural Engineering)

Head of the Department: G. Day Ding
Chairperson of the Graduate Committee: A. C. Bianchini
Correspondence and Information: Chairperson, Graduate Committee, University of Illinois at Urbana-Champaign, 106 Architecture Building, Champaign, Illinois 61820

FACULTY

Professors: R. L. Amico, J. S. Baker, A. C. Bianchini, G. T. Clayton, W. L. Creese, G. D. Ding, W. Eng, G. Francescato, H. L. Hornbeak, R. Jones, R. D. Katz, S. T. Lanford, W. H. Lewis, C. B. Looker, H. J. Miller, F. D. Moyer, E. L. Murphree, A. Notaras, W. J. O'Connell, J. G. Replingér, I. Schousboe J. Severns, I. Schwartz, J. H. Swing, R. L. Tavis, C. A. Winkelhake, H. C. Young

Associate Professors: J. R. Anderson, D. E. Bergeson, V. V. Cafourek, E. H. Clay, S. V. Curcic, K. Froelich, B. G. Freeman, B. L. Hutchings, J. F. Knight, L. A. Leffers, C. A. Moyer, J. W. Murdock, J. E. Simon, R. L. Smith, J. P. Warfield, H. C. White, D. Wickersheimer

Assistant Professors: R. J. Betts, R. M. Brandon, A. Kaha, R. T. Mooney, D. Norback, R. Wesley

Graduate Degree Programs. The Department of Architecture offers three graduate programs, each leading to the Master of Architecture professional degree: a two-year program, for those holding a four-year Bachelor of Science in Architectural Studies (or similar degree in architecture); a one-year program, for those holding a five-year Bachelor of Architecture professional degree; and a three-and-one-half-year program, for those holding a bachelor's degree in any field other than architecture. The Master of Architecture degree is accredited by the National Architectural Accreditation Board.

The Department of Architecture, together with the Department of Business Administration, also offers a double degree program leading to the Master of Architecture degree and the Master of Businese Administration degree.

Admission. Admission with full standing requires an architectural degree equivalent to the four-year Bachelor of Science in Architectural Studies from the University of Illinois or a five-year Bachelor of Architecture professional degree. The admission average must be at least 4.0 (A = 5.0). For those applicants who meet the degree requirements but have an admission average under 4.0, admission with limited standing may be permitted, if evidence of exceptional qualifications is presented. Admission with limited standing may also be permitted for those applicants holding a degree less than equivalent to the University of Illinois degree, provided that equivalency can be established through additional course work.

Applicants are ranked and selected on the basis of the following criteria: undergraduate academic performance on the basis of admission averages determined from official college transcripts; portfolio or brochure of applicant's past work in the architectural field; a statement of objectives; three letters of recommendation; and relevant professional work experience.

Master of Architecture (Two-Year Graduate Program). The two-year professional degree program, intended for those entering with a four-year baccalaureate in architectural studies, emphasizes further study in architectural disciplines, study in depth in one optional area of concentration, and/or participation in research.

Advanced study in architectural disciplines, building upon the fundamentals established in a four-year undergraduate study program, comprises the initial phase of the two-year graduate program. This initial phase is a two-semester integrated sequence in architectural administration, construction, design, and structures. This work completes the common core of course work required of all candidates for the Master of Architecture professional degree.

Election of an optional area of concentration comprises the final phase of the graduate program and allows a student to devote two semesters' work to a specific field of his or her choice. The department offers optional areas of concentration in architectural administration and building technology, architectural design, architectural history, housing environments, architectural management, architectural structures, and urban design. Some of these options afford the opportunity for further specialization: for instance, social and behavioral factors in design, campus planning, criticism, industrialization, design methods and theory, historic preservation, and interior architecture. There is a strong shared interest in environment and behavior studies with the Departments of Landscape Architecture and Urban and Regional Planning, and with the Office of Housing Research and Development. Individualized areas of concentration may also be pursued through an individual study option for which a research thesis is usually required.

Participation in, or initiation of, research is encouraged in the optional areas of concentration. For those qualified, many opportunities currently exist in departmental

and interdepartmental areas. These include unique research opportunities with the National Clearinghouse for Criminal Justice Planning and Architecture, a unit of the Department of Architecture; the Office of Housing Research and Development, a unit of the Graduate College; and the Small Homes Council–Building Research Council, a unit of the College of Fine and Applied Arts.

A candidate admitted with full or qualified standing to the two-year professional degree program must complete at least 15½ units of graduate work. The candidate must spend at least four semesters and earn at least half of the required units in residence. A candidate admitted with full standing may complete the program in two full-time academic years of study.

Master of Architecture (One-Year Graduate Program). Applicants who hold the five-year Bachelor of Architecture degree are considered to have earned their first professional degree. For these students, a one-year professional degree program has been developed emphasizing further study in depth of one optional area of concentration, and/or participation in research identical to the final phase of the two-year graduate program.

A candidate admitted to the one-year graduate program must complete at least 8 units of graduate work. The candidate must spend at least two semesters and earn at least half of the required units in residence. A candidate admitted with full standing may complete the program in one full-time academic year of study.

Master of Architecture (Three and One-Half-Year Graduate Program). The three and one-half-year professional degree program has been designed for those applicants who have a bachelor's degree in any field other than architecture. Emphasis is placed on the development of sufficient background in introductory architectural studies so that the applicant may successfully complete the equivalent of the two-year graduate program described above.

The time necessary to complete the program will depend upon the nature of undergraduate course work completed by the applicant, any professional work experience, and the architectural specialization selected.

Master of Architecture–Master of Business Administration. This double degree program aims at developing the management potential of qualified candidates in a curriculum emphasizing the theory and application of contemporary business administration principles in the comprehensive practice of architecture. For entry into this program, the applicant must satisfy the admission and performance requirements of each department. Application for admission may be made simultaneously to both departments, or admission to the one department may be sought after gaining entry to the other.

A candidate entering the double degree program with a four-year baccalaureate in architectural studies must complete at least 21½ units of graduate work, and if admitted with full standing may complete the program in the condensed time span of five semesters and a summer session. A candidate entering the program with a five-year Bachelor of Architecture degree must complete at least 17 units of graduate work, and if admitted with full standing may complete the program in the condensed time span of four semesters and a summer session.

ART AND DESIGN

(Including Art Education, Art History, Ceramics-Metalworking-Glassworking, Graphic Design, Industrial Design, Painting, Photography, Cinematography, Printmaking, and Sculpture)

Acting Head of the Department: E. C. Wicks
Assistant Head: Curtis Stephens
Correspondence and Information: Graduate Programs, Department of Art and Design, University of Illinois at Urbana-Champaign, 143 Fine Arts Building, Fourth Street and Peabody Drive, Champaign, Illinois 61820

FACULTY

Professors: E. H. Betts, P. Bodnar, G. Bradshaw, W. C. Briggs, P. Felh, D. Frith, F. Gallo, F. E. Gunter, K. M. Lansing, N. T. McFarland, A. D. Moore, A. Perkins, R. Perlman, E. C. Rae, J. A. Savage, J. R. Shipley, A. Sinsabaugh, M. Sprague, R. Sterkel, R. von Neumann, E. C. Wicks, E. J. Zagorski, J. Ziff

Associate Professors: L. Bell, R. Blakley, M. Franciscono, G. W. Hardiman, H. D. Hilson, H. Jackson, H. J. Marshall, K. Munakata, D. Pilcher, J. Rascheff, C. Regehr, D. Rowan, D. Socha, T. Zernich

Assistant Professors: D. Bushman, A. Morgan

Graduate Degree Programs. The Department of Art and Design offers the Master of Arts in Art Education and in Art History, the Master of Fine Arts, the Doctor of Art History, and the Doctor of Philosophy in Art History. The Graduate College admissions requirements apply for all programs.

Master of Arts in Art Education. A candidate for the A.M. in Art Education must have completed an undergraduate degree in art education, or a degree judged to be its equivalent. The applicant must have (or be eligible for) a teaching certificate in the field. Satisfactory completion of 8 units of course work and at least two semesters or the equivalent in residence is necessary for the degree. No thesis or foreign language is required.

Master of Arts in Art History. Applicants for the A.M. in Art History must have a bachelor's degree in art history or a degree judged to be its equivalent. Requirements for the degree include: a reading knowledge of French or German, successful completion of a comprehensive examination, a thesis or scholarly paper, the satisfactory completion of 8 units of course work, and a minimum of two semesters in residence.

Master of Fine Arts. Approved areas of specialization include ceramics-metalworking-glassworking, graphic design, industrial design, painting, photography, cinematography, printmaking, and sculpture. Applicants are expected to have completed an undergraduate program in the major area of study for which they are seeking admission. The undergraduate transcript must indicate an emphasis on experience and production within the major field. A portfolio of examples of the applicant's creative work must be submitted to the Department of Art and Design at the time that an application for admission is submitted to the Office of Admissions and Records. Satisfactory completion of 16 units of course work and a written report are required for the degree. Candidates must spend a minimum of four semesters in residence.

Doctor of Education in Art Education. Admission to the program for the Ed.D. in Art Education requires a master's degree in fine arts or art education, or the equivalent from an accredited institution, and a minimum of two years of acceptable teaching experience. The Committee on Graduate Study in Art Education will determine which applicants qualify for admission. Requirements include a minimum of 16 units of course work beyond the master's degree, satisfactory performance on preliminary and final examinations, and a thesis which meets all Graduate College regulations covering preparation and submission. Students usually require from three to five years to complete the degree requirements.

Doctor of Philosophy in Art History. Applicants for admission to the Doctor of Philosophy in Art History program must hold a master's degree in art history, or its equivalent, from an accredited institution. The Graduate Committee in History of Art and Architecture will determine which applicants qualify for admission. Requirements include a minimum of 16 units of course work beyond the master's degree, satisfactory performance on preliminary and final examinations, and a thesis which meets all Graduate College regulations covering preparation and submission. Students usually require from three to five years to complete the degree requirements.

Financial Aid. Fellowships, assistantships, and tuition and service fee waivers are explained elsewhere in this catalog. Recommendations and awards from the Department of Art and Design are made on a competitive basis with consideration for

applicants who have a high grade-point average, and in the case of applicants for the M.F.A. programs, creative work of excellent quality.

Resources. Resources for the graduate student in art and design include the Krannert Art Museum's excellent permanent collections and changing exhibitions; the Ricker Library, one of the largest art and architecture libraries in the nation; the Krannert Center for the Performing Arts; and a variety of lectures, symposiums, musical programs, dramatic productions, and other cultural events associated with a large and progressive university.

ASIAN STUDIES

(Including Burmese, Chinese, Indonesian, Japanese, Korean, Sanskrit, and Thai)

Director: Harold A. Gould
Associate Director and Graduate Supervisor: William L. MacDonald
Correspondence and Information: William L. MacDonald, Graduate Supervisor, Center for Asian Studies, University of Illinois at Urbana-Champaign, 1208 West California Avenue, Urbana, Illinois 61801

FACULTY

Professors: E. Bruner, W. Buddemeier, R. Crawford, C. Cunningham, C. E. Dawn, L. Eastman, F. Fliegel, F. Gottheil, H. Gould, N. Jacobs, B. Kachru, Y. Kachru, B. Karsh, C. Kim, F. K. Lehman, B. Nettl, A. Peshkin, A. Perkins, D. Plath, A. Ringer, P. Schran, K. Taira, G. L: Tikku, E. Wolff, G. Yu, L. Zgusta
Associate Professors: W. Archer, R. Chang, C. Cheng, H. Choldin, S. Cohen, S. Douglas, K. Gould, H. Hock, T. Hymowitz, B. Kim, B. Kling, W. MacDonald, S. Makino, K. Munakata, S. Sato, M. Wagner, H. Wechsler, M. Weinbaum, M. Weinstein
Assistant Professors: D. Bisgaard, J. Brukman, C. Capwell, P. Cole, L. Crissman, J. Hart, R. Jennings, A. Koseki, R. Kraus, W. Maxwell, C. Mulhern, J. Peterson, J. Pierson, M. Shorish, K. Southwood, R. Vanneman

Graduate Degree Program. The Center for Asian Studies offers a two-year program of language and area courses leading to the Master of Arts, with regional concentrations in East Asia, Middle East, South Asia, and Southeast Asia. The program is a basic preparation in language and area training, both for those intending to proceed to the Ph.D. in a related field and for those preparing for careers not requiring the doctorate. The Center for Asian Studies also administers a graduate minor in Asian studies in cooperation with various departments, allowing a graduate student electing this minor to concentrate on East Asia, Middle East, South Asia, and Southeast Asia, or a combination of two or more of these areas.

Admission. Candidates for admission must meet at least the minimum standards established by the Graduate College for graduate study at the University of Illinois at Urbana-Champaign, but final selection is determined by a committee of center faculty. Applicants must specify one of the regional concentrations at the time of application. Although prior language and area training relating to the regional concentration is highly desirable, it is not required for admission. Those entering without any prior training or experience, however, may be required to take, without credit toward the degree, such work as the adviser may deem necessary to make up any deficiencies.

Master of Arts. A candidate must complete 9 units of work in area studies distributed among at least three disciplines and chosen from an accepted list of courses, demonstrate a reading knowledge of one language related to the candidate's regional con-

centration by satisfactory completion of an examination or appropriate course work, pass an examination covering the area studies taken while in residence, and complete two satisfactory research/seminar papers. No thesis is required.

Minors in Asian Studies. A candidate for a master's degree who elects Asian studies as a minor must earn at least 2 units of graduate credit in approved courses in at least two departments outside the major department. .

A doctoral candidate who elects Asian studies as a minor must earn at least 4 units of graduate credit in approved courses in at least two departments outside the major department. Also, prior to the completion of course requirements for the degree, the doctoral candidate must complete satisfactorily an examination in an appropriate Asian language.

ASTRONOMY

Head of the Department: Icko Iben, Jr.
Correspondence and Information: Head, Department of Astronomy, University of Illinois at Urbana-Champaign, 103 Observatory, Urbana, Illinois 61801

FACULTY

Professors: I. Iben, Jr., J. B. Kaler, L. E. Snyder, G. W. Swenson, Jr., J. W. Truran, W. D. Watson, S. P. Wyatt, K. M. Yoss
Associate Professors: J. H. Cahn, H. R. Dickel, J. R. Dickel, J. S. Gallagher III, E. C. Olson
Assistant Professors: R. J. Bieniek, R. M. Crutcher, M. Elitzur, P. S. Hoover, T. C. Mouschovias, R. F. Webbink
Research Associate: J. M. Lattimer

Graduate Degree Programs. The Department of Astronomy offers graduate work leading to the Master of Science and Doctor of Philosophy degrees. The goal of the graduate program in astronomy is to provide broadly based training in modern astrophysics and astronomy for a small and carefully selected student body. Individually designed programs involving close contact with faculty members are encouraged, and an understanding of fundamental principles and techniques and their applications to research problems of current interest is emphasized. Students are expected to acquire a solid knowledge of modern physics as well as of general astronomy. A major objective is to maintain an exciting intellectual environment in which students can develop their scientific creativity and their enthusiasm for astronomy.

Admission. Admission decisions are made once a year in the spring. Applications for admission and financial assistance must be received by February 15. Normal entrance requirements are a bachelor's degree in astronomy, physics, electrical engineering, physical chemistry, or mathematics, and a one-year course in descriptive astronomy. A minimum grade-point average of 4.0 (A = 5.0) and satisfactory scores on the Graduate Record Examination (verbal, mathematics, and advanced portions) are requisites for admission. The award of financial assistance normally requires an average of higher than 4.5.

Master of Science. Eight units of study in graduate courses are required. There are no thesis or foreign language requirements. The 8 units of course work may be distributed as follows: all units taken in astronomy; or 2 units selected from approved courses in physics, 2 units from approved courses in mathematics and electrical engineering, and the remaining units from astronomy courses.

Doctor of Philosophy. The Ph.D. requires completion of sixteen one-semester graduate-level courses in astronomy and related fields (some of which may involve individual study and research), satisfactory performance on a general qualifying examination taken in the second or third semester of study, demonstrated reading ability in one foreign language, and completion of an original research project culminating in a thesis that is publishable in whole or in part.

Financial Aid. University Fellowships are available and may be combined with part-time teaching assistantships. Most resident students are supported for their first two or three years by half-time teaching assistantships ($4,400 per academic year). The typical teaching assistant takes three graduate courses per semester and spends twenty hours per week handling quiz sections in elementary astronomy courses. Teaching assistantships are responsible positions, and the concomitant duties are considered to be a valuable part of the student's educational experience. Advanced students may compete for research assistantships offered by faculty members whose research is partially supported by federal grants.

Faculty Research Interests. Research activity includes observational and theoretical investigation of the solar system (comets, planets, cosmochronology); stars (stellar structure and evolution, gravitational collapse, nucleosynthesis, novae, supernovae, stellar atmospheres, binaries, stellar statistics, pulsars); the interstellar medium (planetary nebulae, molecular clouds, cosmic rays, supernova remnants, galactic structure); and extragalactic systems (galaxies, their thermonuclear evolution and dynamic behavior, quasars).

Astrophysics is also a strong research interest of about a dozen faculty members in the Departments of Electrical Engineering and Physics. Current activity in the Department of Physics centers on the physics of neutron stars, white dwarfs, compact X-ray sources, and supernova ejecta, with broad-ranging interests in the application of modern physics to astronomy. Topics of interest in modern astronomy and astrophysics are not restricted to conventional departmental boundaries. Students in astronomy may select thesis supervisors in the Departments of Electrical Engineering or Physics, as well as in Astronomy.

Research Facilities. A 40-inch-diameter reflecting telescope is located forty miles southeast of the campus. A 120-foot-diameter radio telescope is located forty miles east of the campus. It is the largest steerable radio telescope in the Midwest. Computations are performed on an IBM 360/75 and a CDC Cyber 175, both accessed via remote terminals in the Department of Astronomy. Simultaneous time sharing and batch processing with unusual speed are features of the computational system, which is among the most advanced university-based systems in the nation.

ATMOSPHERIC SCIENCES

Chairperson of the Graduate College Committee on Atmospheric Science and Meteorology: R. O. Simmons

Correspondence and Information: Y. Ogura, Director, Laboratory for Atmospheric Research, University of Illinois at Urbana-Champaign, 291 Coordinated Science Laboratory, Urbana, Illinois 61801

FACULTY

Professor: Y. Ogura

Associate Professors: K. V. K. Beard, J. M. Lewis, M.-K. Mak, K. E. Trenberth

Assistant Professors: B. P. B. Hickie, S.-T. Soong, W.-Y. Sun, J. E. Walsh, R. B. Wilhelmson

Graduate Degree Programs. Course work leading to the Master of Science and Doctor of Philosophy degrees is offered.

Admission. Applications for admission to this program must satisfy the general requirements for admission to the Graduate College. Previous training in the atmospheric sciences is not essential. It is strongly recommended, however, that students who intend to study for advanced degrees in the atmospheric sciences know the fundamentals of classical physics and applied mathematics. There is no foreign language requirement.

Master of Science. A candidate for the Master of Science must complete 8 units of credit. Three of the 8 must be from courses numbered in the 400 series, and 2 of these 3 must be in the major field. The Atmospheric Science course for master's thesis research, Atmos. 499, Section A, cannot be used to satisfy the latter requirements. Required courses for the degree are Atmos. 301, 302, and 401. Consequently, at least one other 400-level Atmospheric Science course must be taken (excluding 499). A written thesis, involving from 1 to 2 units of credit, is a part of this requirement. Further information on exact degree requirements can be obtained through the Laboratory for Atmospheric Research.

Doctor of Philosophy. All candidates for the Ph.D. must satisfy the general requirements of the Graduate College and are required to pass a qualifying examination on the basic principles of atmospheric science, a preliminary examination based on a written thesis proposal, and a final examination based on the completed thesis. Course requirements and these examinations are described in detail in a pamphlet which may be obtained from the Laboratory for Atmospheric Research.

Financial Aid. Students may compete for research assistantships, University Fellowships, and waivers of tuition and service fees.

Research Interests. These degree programs are designed for students interested in research and application in many aspects of atmospheric sciences. The areas of research include the observational and theoretical investigations of mesoscale atmospheric systems, the numerical modeling of clouds and severe storms, the planetary boundary layer, dynamics of monsoonal circulation, dynamics of the upper atmosphere, dynamics of tropical circulations, polar meteorology, radiative transfer in the atmosphere, global scale circulations, climate, and ocean circulation dynamics.

BUSINESS ADMINISTRATION

Head of the Department: Kenneth P. Uhl

Correspondence and Information: Department of Business Administration, University of Illinois at Urbana-Champaign, 350 Commerce Building (West), Urbana, Illinois 61801

FACULTY

Professors: A. Andreasen, N. M. Bedford, P. M. Dauten, R. V. Evans, R. Ferber, D. M. Gardner, R. M. Hill, D. Linowes, L. R. Pondy, W. Primeaux, K. M. Rowland, G. R. Salancik, H. M. Shoenfeld, J. N. Sheth, J. L. Simon, S. Sudman, W. E. Thomas, K. P. Uhl, W. Zangwill

Associate Professors: A. J. Arnould, R. L. Black, H. Hinomoto, G. Oldham, D. Roberts, A. Roth, T. Stone, F. W. Winter

Assistant Professors: R. Atkinson, C. Blair, R. W. Belk, E. Kofman, M. Moch, J. K. Murnighan, P. Webb, D. Whetten

Graduate Degree Programs. The Department of Business Administration offers graduate programs leading to the degrees of Master of Business Administration, Master of Science in Business Administration, and Doctor of Philosophy in Business Administration. The department also offers, in cooperation with other departments and colleges, a variety of interdisciplinary programs leading to such combined degrees as the Master of Business Administration and Juris Doctor, the Master of Business Administration and Master of Architecture, and the Master of Business Administration and Bachelor of Arts (or Science) for superior undergraduates.

Admission. The minimum admission requirement for master's degrees is a grade-point average of 4.0 (A = 5.0) on the last two years of course work (for the doctoral degree, a grade-point average of 4.25) and a score of at least 550 on the Graduate Management Admission Test administered by the Educational Testing Service,

Princeton, New Jersey 08540. Applicants with extenuating circumstances should contact the director of graduate studies in business administration. Persons seeking admission should have completed one year of college-level courses in calculus or be prepared to do so immediately upon entering the program. In general, admission is based on a person's (1) previous academic accomplishment; (2) demonstrated potential as indicated by performance on the Graduate Management Admission Test; (3) statement of educational goals; and (4) letters of recommendation from professors, supervisors, or colleagues.

Master of Business Administration. The Master of Business Administration is designed to meet the general educational needs of persons preparing for administrative positions. It encourages the development and application of fundamental concepts and methods in the quantitative, social, and behavioral sciences to problems in administrative decision making. Superior students without a background in business can achieve a rigorous educational background in administration within two years or less by completing 16 units of course work. Persons with prior business education may graduate with as few as 12 units of course work. The program may be started in the summer, fall, or spring terms.

Three areas of study in quantitative methods, behavioral science, and economics make up the required program core, and four courses covering marketing, production, financial management, and managerial accounting and control constitute the functional areas. The core courses introduce and integrate the contributions of the quantitative, social, and behavioral sciences to the functional areas. Two additional courses, in law and business policy and in business policy and planning, provide an overview of the legal environment and policy and planning. Four elective courses complete the program. A minimum grade-point average of 3.75 is necessary for degree conferral.

Master of Science in Business Administration. The Master of Science in Business Administration is a 10-12-unit master's program for persons with an undergraduate education in business who desire additional training in a specialized area. The focus is on preparation for advanced study in the doctoral program or for a technical or research position in industry or government. The course work can usually be completed in one to one and one-half years.

The program core for this degree is the same as for the Master of Business Administration. Four courses constitute the major area of specialization, to be chosen from management science, organizational behavior, management information systems, marketing, international business operations, and administration. Two courses constitute a minor area. They can be independent research courses, or can be chosen from relevant courses offered within or outside the department. In place of the two courses, a thesis may be prepared.

Doctor of Philosophy in Business Administration. This program offers an in-depth education in teaching and research in selected areas of business and administration. Doctoral students can specialize in management science, marketing, organizational behavior, management information systems, production, administration, or other areas. The program is flexible and adapted to individual needs.

Each student's program entails sufficient study and preparation to achieve the following: (1) competence in behavioral science, operations research, research methodology, and statistics, constituting the core of the program; (2) in-depth expertise in a major area; (3) expertise in at least one area in addition to the chosen major area; this minor area may be selected from within or outside the department; (4) teaching competence; (5) research or problem-solving competence.

Competency is determined by comprehensive written and/or oral examinations. Following successful completion of all course work and comprehensive examinations in major and minor areas, the student must propose and gain approval of a dissertation topic at a public colloquium. The final program requirement is the successful oral defense of the dissertation.

For persons entering the program from an undergraduate program, the minimum requirements are 16 course units and 8 dissertation units. Persons entering with a master's degree in business generally will need a minimum of 8 course units and 8

dissertation units. The program usually is completed in four years, although students with a master's degree in business may require only three years.

Master of Business Administration and Juris Doctor Program. This program, leading to the M.B.A. and J.D. degrees in four years, is designed to provide training for careers in which administration and law significantly overlap. To enter the program, a person must apply separately and be admitted to both the College of Law and the Department of Business Administration. The policies of each with respect to degree requirements, grades, examinations, and other academic requirements for graduation are applicable.

During the first two years, the student takes the first-year law curriculum in one year and the first-year business administration curriculum in the other. The student takes courses in both colleges during the third and fourth years. As a minimum program, a student must take 74 hours of law courses and 12 units (or 48 semester hours) of business administration courses.

Master of Business Administration and Master of Architecture. This program is designed to provide training for careers in which administration and management principles in architecture overlap. Applicants to the program must be admitted to both the Department of Architecture and the Department of Business Administration. One application form and one fee are required. The policies of each department with respect to degree requirements, grades, examinations, and other academic requirements for graduation are applicable.

This double master's program enables the student taking a full load each semester and with normal progress to fulfill the requirements for both degrees by completing a total of 21½ units in five semesters and a summer session.

Other Joint Programs. The Department of Business Administration has approval for a program leading to the M.B.A. with specialization in research management, in conjunction with the Survey Research Laboratory. Interested persons should make inquiries with the department.

Residence Requirement. Master's degree candidates must maintain continuous registration throughout course work completion; Ph.D. candidates must maintain continuous registration through approval of a dissertation proposal. Leaves of absence for up to one year are permitted under extenuating circumstances, with Graduate College and departmental approval.

Financial Aid. Financial assistance is available through nonservice awards such as fellowships and/or tuition and fee waivers; service awards such as teaching and research assistantships; work-study programs; and loans. Application can be made on admission applications filed by February 15. Nonservice awards are made by the Graduate College based on scholarly and creative achievement and promise. Service awards are selected by the Department of Business Administration with approval of the Graduate College.

Research Interests. Faculty research interests are in the areas of marketing, organizational behavior, management science, accounting, economics, and finance. The College of Commerce and Business Administration houses computer facilities, a behavioral science laboratory, and a separate library, and maintains contacts with industry and government through its Executive Development Center, Survey Research Laboratory, Bureau of Economic and Business Research, and several professional and scholarly journals.

CERAMIC ENGINEERING

(Including Ceramics)

Head of the Department: A. L. Friedberg

Correspondence and Information: A. L. Friedberg, Head, Department of Ceramic Engineering, University of Illinois at Urbana-Champaign, 205 Ceramics Building, Urbana, Illinois 61801

FACULTY

Professors: R. L. Berger, C. G. Bergeron, S. D. Brown, A. L. Friedberg, J. A. Nelson, W. S. Williams
Associate Professors: R. C. Buchanan, T. A. Willmore, G. P. Wirtz
Assistant Professor: D. A. Payne

Graduate Degree Programs. The Department of Ceramic Engineering offers graduate work leading to the Master of Science and the Doctor of Philosophy degrees in two areas, ceramic engineering and ceramics. The ceramic engineering program provides instruction and research related to the applied engineering science of ceramic materials, processing, and products. Candidates in this area of graduate work are usually those who have completed an undergraduate degree in engineering. The program in ceramics is more concerned with basic science, and candidates may come from nonengineering disciplines such as chemistry, physics, or geology.

Admission. The minimum acceptable admission average is 4.0 (A = 5.0) on the advanced undergraduate academic work of the candidate and on any previous graduate work completed. Letters of reference are also used in making the departmental recommendation on admission. For foreign students the minimum acceptable TOEFL score is 575. Graduate Record Examination scores are not recorded.

Master of Science. The candidate for the Master of Science in Ceramic Engineering or in Ceramics must complete a minimum of 8 units of graduate work including a thesis. Five units of course work are required including at least 1½ units of Ceramic Engineering 400-level courses excluding Ceramic Engineering 495 and 499.

Doctor of Philosophy. Doctor of Philosophy candidates whose undergraduate degree was not earned in ceramic engineering or in ceramics are required to complete seven Ceramic Engineering 300- or 400-level courses. Candidates are required to complete first the master's thesis or give evidence of equivalent research experience. They must also pass the departmental qualifying examination. There is no foreign language requirement. Minor requirements are satisfied by courses in chemistry, physics, mathematics, geology, or other engineering disciplines. Students majoring in chemistry, physics, engineering, and in certain other fields may take sole or second minors in ceramics or ceramic engineering.

Financial Aid. Candidates for graduate degrees may be supported through assistantships, fellowships, or waivers of tuition and service fees. Assistantships for research or teaching provide for a monthly stipend plus waiver of tuition and service fees. Fellowships require no work commitment and also pay a monthly stipend to the student, as well as tuition and fees. Awards for financial assistance are based principally on the candidate's academic record, statement of plans, and letters of reference.

CHEMICAL PHYSICS

Head of the Department of Chemistry: H. S. Gutowsky
Head of the Department of Physics: Ralph O. Simmons
Correspondence and Information: Students with undergraduate degrees in chemistry should direct inquiries and applications to the Head of the Department of Chemistry, University of Illinois at Urbana-Champaign, 108 Noyes Laboratory, Urbana, Illinois 61801; students with undergraduate degrees in physics should direct inquiries and applications to the Head of the Department of Physics, University of Illinois at Urbana-Champaign, 211 Loomis Laboratory of Physics, Urbana, Illinois 61801.

Graduate Degree Programs. A chemical physics program leading to the Doctor of Philosophy makes it possible for students to gain the necessary background and perform original research in this interdisciplinary field of science. Fundamental research on

many properties of molecular and solid state systems is based on an understanding of chemistry, physics, and mathematics that can best be obtained by training in more than one department. Students may make use of the facilities available in both the School of Chemical Sciences and the Department of Physics.

Admission. To be considered for admission, applicants should have undergraduate degrees in chemistry or physics, with a strong background in the major field of chemistry or physics, and more than the usual training in the other area. Those who received their degrees in physics should have the equivalent of one semester each of organic and inorganic chemistry and one year of physical chemistry. Those who received their degrees in chemistry should have the equivalent of one semester each of intermediate mechanics and intermediate electricity and magnetism. One year of mathematics beyond calculus is recommended. Any deficiencies should be removed during the first year of study.

Doctor of Philosophy. In addition to taking a series of appropriate courses, determined mainly by their research interests, students must pass either the qualifying examination in the Department of Physics or the set of cumulative examinations given in physical chemistry. A knowledge of basic quantum mechanics and statistical mechanics must also be demonstrated (for example, by passing the final examination in appropriate courses). In addition, students must pass an oral preliminary examination concerned with their preparation for doing research. Research for the dissertation is performed under the direction of faculty who are currently active in chemical physics. Many of these staff members are affiliated with the Materials Research Laboratory (MRL). MRL is a multidisciplinary facility shared by staff and students from Physics, Chemistry, Metallurgy, Ceramic Engineering, Electrical Engineering, and other related departments, who have common interests in materials science.

Financial Aid. Students may apply for fellowships and assistantships from either the Department of Chemistry or the Department of Physics.

CHEMICAL SCIENCES

(Including Biochemistry, Chemical Engineering, and Chemistry)

Director of the School of Chemical Sciences: H. S. Gutowsky
Correspondence and Information: Director of the School of Chemical Sciences, University of Illinois at Urbana-Champaign, 108 Noyes Laboratory, Urbana, Illinois 61801

The School of Chemical Sciences includes the Departments of Biochemistry, Chemical Engineering, and Chemistry. Study programs leading to the degrees of Master of Science and Doctor of Philosophy are offered in each of the departments as described in the following sections. The school structure is designed to meet the differing needs of the three departments, and yet retain the advantages of a common approach to overlapping concerns. Support for graduate training is available in the form of assistantships, traineeships, and fellowships. Prospective students may obtain application forms and information relevant to their interests from the head of the appropriate department or from the director of the School of Chemical Sciences.

Biochemistry

Head of the Department: Lowell P. Hager
Correspondence and Information: Head, Department of Biochemistry, University of Illinois at Urbana-Champaign, 415 Roger Adams Laboratory, Urbana, Illinois 61801

FACULTY

Professors: H. E. Conrad, I. C. Gunsalus, L. P. Hager, N. J. Leonard, R. F. Nystrom, G. Weber
Associate Professors: J. M. Clark, Jr., R. I. Gumport, R. L. Switzer, O. C. Uhlenbeck
Assistant Professors: T. O. Baldwin, R. B. Gennis, M. Glaser, A. Jonas, W. F. Mangel, G. W. Ordal, D. J. Shapiro

Graduate Degree Programs. The Department of Biochemistry offers graduate work leading to the Master of Science and the Doctor of Philosophy degrees.

Admission. Admission to the M.S. and Ph.D. programs is limited to graduates with bachelor's degrees equivalent to those of the University of Illinois. Admission is generally limited to undergraduates who have basic backgrounds in organic and physical chemistry, in biology, and in mathematics through calculus. Students lacking such background may be required to obtain it during the course of their graduate study. Admission is also generally limited to students with undergraduate grade-point averages of 4.2 or higher (A = 5.0). For admission, students must have at least a 4.0 average for the last 60 hours of undergraduate work, or the last 60 hours of undergraduate work and total accumulated graduate work, whichever is appropriate.

Master of Science. The Master of Science in Biochemistry may be completed with or without a thesis. A course-work master's degree requires a minimum of two full-time semesters and involves 8 units of formal lecture and laboratory course work with at least 5 of those units in 400-level courses. A Master of Science degree with thesis usually requires a minimum of three semesters' work, and 3 of the 8 required units may be thesis research.

Doctor of Philosophy. The Ph.D. candidate in biochemistry must pass an oral research qualifying examination within the first eighteen months of residency, and successfully complete a series of written cumulative examinations. Four and one-half units of biochemistry course work and 3 to 4 units of course work outside of biochemistry are required. Proficiency is required in one modern foreign language (German, French, or Russian). Proficiency may be demonstrated by successful completion of a reading examination in the chosen language or by presentation of two years of undergraduate credit in one of these languages. A thesis based on original research must be presented to a review committee at least two weeks prior to the final examination. The final examination is limited to a defense of the thesis research. The Ph.D. degree program usually takes four to five years for completion. Experience in teaching is considered a vital part of the graduate program and is required as a part of the academic work of all Ph.D. candidates in this department.

Financial Aid. Financial aid for graduate students in biochemistry is available in the form of traineeships, fellowships, and teaching and research assistantships. A training grant from the National Institutes of Health supports a multidisciplinary training program. The department usually supplements trainee stipends with a quarter-time teaching assistantship for one semester in the academic year.

Chemical Engineering

Head of the Department: J. W. Westwater
Correspondence and Information: Head, Department of Chemical Engineering, University of Illinois at Urbana-Champaign, 113 Roger Adams Laboratory, Urbana, Illinois 61801

FACULTY

Professors: R. C. Alkire, H. G. Drickamer, C. A. Eckert, T. J. Hanratty, R. A. Schmitz, J. W. Westwater
Assistant Professors: R. I. Masel, J. A. Shaeiwitz, M. A. Stadtherr

Graduate Degree Programs. The Department of Chemical Engineering offers graduate work leading to the Master of Science and the Doctor of Philosophy degrees. Those interested should write to the address above for application materials and a departmental brochure which gives greater detail on programs, offerings, admission and degree requirements, and financial aid.

Admission. Candidates for advanced degrees in chemical engineering should have a background in chemistry and chemical engineering comparable to the training offered in the undergraduate chemical engineering curriculum at the University of Illinois. Students whose prior training is deficient in one or more basic areas of chemistry or chemical engineering will be admitted with deficiencies to be removed to the extent prescribed by their advisers. Graduate College admissions requirements also apply.

Master of Science. Requirements for the Master of Science include 8 units of graduate credit and a thesis. At least 5 of these units must be in courses other than thesis research, and they must include at least two graduate-level chemical engineering courses.

Doctor of Philosophy. Requirements include 24 units of graduate credit, satisfactory performance on qualifying and certification examinations, and a thesis. The credit requirement includes a minimum of four graduate-level courses in chemical engineering and a coherent program of at least four courses in one or two other departments. The qualifying examination is a written test normally taken after one year of study. The certification examination is an individual oral examination taken after the student has satisfied the course requirements. It focuses on the student's proposed thesis research.

Chemistry

Head of the Department: H. S. Gutowsky
Associate Head: J. P. Hummel
Correspondence and Information: Head, Department of Chemistry, University of Illinois at Urbana-Champaign, 108 Noyes Laboratory, Urbana, Illinois 61801

FACULTY

Professors: D. E. Applequist, P. Beak, T. L. Brown, R. M. Coates, D. Y. Curtin, R. S. Drago, H. G. Drickamer, W. H. Flygare, H. S. Gutowsky, G. P. Haight, Jr., J. P. Hummel, J. Jonas, N. J. Leonard, H. V. Malmstadt, R. A. Marcus, J. C. Martin, I. C. Paul, K. L. Rinehart, Jr., S. G. Smith, G. D. Stucky, P. E. Yankwich
Associate Professors: R. L. Belford, D. Chandler, C. A. Evans, Jr., L. R. Faulkner, D. N. Hendrickson, J. A. Katzenellenbogen, J. D. McDonald, W. H. Pirkle, D. H. Secrest, O. C. Uhlenbeck
Assistant Professors: A. J. Arduengo III, W. G. Breiland, C. E. Dykstra, R. B. Gennis, K. J. Kaufmann, T. A. Nieman, E. Oldfield, E. P. Rogers, G. B. Schuster, J. R. Shapley

Graduate Degree Programs. The degrees offered in chemistry are Master of Arts or Master of Science in Chemistry, Master of Science in the Teaching of Chemistry, and Doctor of Philosophy in Chemistry. Attention is also called to a joint program leading to the Doctor of Philosophy in Chemical Physics (see page 69) and to the programs in biophysics (see page 123) and in biophysical chemistry (see page 73).

Admission. Students who have fulfilled the usual undergraduate course requirements, including at least 25 properly distributed semester hours in chemistry, may be considered for admission to the Graduate College in any of the programs offered by the Department of Chemistry. Students who have completed graduate work in chemistry at another institution may be considered for admission if they have averages of 4.0 (A = 5.0) in both undergraduate and graduate work, or if they have earned a 4.25 average in

at least 8 units or a full year of graduate work at an accredited institution. Students applying for admission to the program in the teaching of chemistry are expected to have a valid secondary teaching certificate or to make arrangements for obtaining one before completing the requirements for the degree.

Master of Science in the Teaching of Chemistry. Candidates for the Master of Science in the Teaching of Chemistry must earn 4 units of credit in chemistry, 2 units in education, and 2 units of electives in either education or physical science. The 2 units in education consist of courses in educational policy studies and educational psychology. The courses in chemistry and the electives, which must normally give graduate credit, must be selected with the approval of the adviser. No thesis is required. Questions concerning the teaching of chemistry program should be addressed to Professor D. H. Secrest, 155 Noyes Laboratory.

Master's Programs in Chemistry. The programs leading to degrees of Master of Arts or Master of Science in Chemistry are designed to be completed in one year of full-time study by students entering without deficiencies. A thesis is optional. If a thesis is elected, 5 units of formal courses are required, 3 of which must be 400-level courses. Of these 3, 2 must be in chemistry. If a thesis is not elected, an additional 3 units of formal courses are required.

Doctor of Philosophy. Doctoral programs are offered in a wide range of specialities, including the traditional areas of analytical, inorganic, organic, and physical chemistry. Students usually require from three to five years to complete the requirements. Besides completing formal course work, the students are required to pass a series of written cumulative examinations, demonstrate a reading knowledge of a foreign language (except in physical and biophysical chemistry), pass an oral preliminary examination on research preparation, and submit a thesis on original research which is defended at a final oral examination. The formal course requirements involve 2½ units of 400-level courses in the major area of interest and 3 units in allied areas or fields. Although teaching is not a general Graduate College requirement, this department requires Ph.D. candidates to do some teaching as part of their academic work, such experience being considered a vital part of the graduate program.

Program in Biophysical Chemistry. The Department of Chemistry offers an area of specialization in biophysical chemistry. The program is flexible and provides the student with basic training in physical chemistry, physical biochemistry, and biology. Students electing this area should have a solid background in physics and mathematics. Details of the curriculum are decided individually. Interested students should direct inquiries and applications to the head of the Department of Chemistry.

CIVIL ENGINEERING

(Including Environmental Engineering in Civil Engineering)

Head of the Department: J. C. Liebman

Correspondence and Information: Head, Department of Civil Engineering, University of Illinois at Urbana-Champaign, B114 Civil Engineering Building, Urbana, Illinois 61801

FACULTY

Professors: W. C. Ackermann, A. H.-S. Ang, J. E. Baerwald, E. J. Barenberg, R. L. Berger, D. E. Boyce, J. W. Briscoe, A. B. Chilton, V. T. Chow, E. J. Cording, M. T. Davisson, D. C. Drucker, R. S. Engelbrecht, R. A. Eubanks, B. B. Ewing, W. L. Gamble, G. R. Gurfinkel, W. J. Hall, J. D. Haltiwanger, W. W. Hay, A. J. Hendron, M. Herrin, E. R. Holley, H. O. Ireland, H. M. Karara, C. E. Kesler, N. Khachaturian, R. W. Larimore, T. E. Larson, F. V. Lawrence, J. C. Liebman, W. P. Lowry, J. W. Melin, R. J. Mosborg, W. H. Munse, J. P.

Murtha, N. M. Newmark, R. B. Peck, J. T. Pfeffer, A. R. Robinson, W. C. Schnobrich, L. R. Shaffer, C. P. Siess, G. K. Sinnamon, V. L. Snoeyink, M. A. Sozen, J. J. Stukel, J. E. Stallmeyer, M. R. Thompson, K. W. Wong, R. N. Wright, B. C. Yen, J. F. Young

Associate Professors: L. T. Boyer, E. S. K. Chian, B. J. Dempsey, R. E. Heuer, J. S. Liebman, L. A. Lopez, W. H. C. Maxwell, J. McDonald, G. Mesri, D. A. W. Pecknold, W. Tang, W. H. Walker, Y. K. Wen, H. G. Wenzel

Assistant Professors: E. D. Brill, S. H. Carpenter, M. I. Darter, L. J. Forney, D. A. Foutch, J. Ghaboussi, E. E. Herricks, S. L. Paul, S. J. Randtke, N. K. Saxena, G. W. Tauxe

Graduate Degree Programs. The Department of Civil Engineering offers graduate work leading to the Master of Science and Doctor of Philosophy in Civil Engineering and in Environmental Engineering in Civil Engineering.

Emphasis is placed upon advanced study and participation in creative research. Graduate study and research can be pursued in the following general fields: air pollution, computer-aided design, construction management, structural analysis and design, foundations, earthquake engineering, environmental engineering in civil engineering, geodesy, highway and materials, hydraulics and hydrology, liquid-solid waste management, materials engineering, nuclear shielding, photogrammetry, soil and rock mechanics, structural mechanics, probability and stochastic processes, systems engineering, transportation, and water resources. Interdisciplinary programs with other departments or colleges can also be arranged.

Admission. Students are admitted with full standing if they hold undergraduate degrees substantially equivalent to those of the University of Illinois, provided the applicant's preparation is appropriate to advanced study in his or her chosen major field. For additional information, see the department pamphlet "Graduate Study and Research in Civil Engineering and in Environmental Engineering in Civil Engineering." In general, a 4.0 grade-point average (A = 5.0) for the last 60 hours of the undergraduate program and for any previous graduate work is a miminum requirement for admission to the M.S. program. Requirements for admission to the Ph.D. program are variable, but normally substantially higher. The Graduate Record Examination is not required, but is highly recommended.

Master of Science. A master's program may be completed in one full-time academic year of study. A candidate for the master's degree must complete at least 9 units without a thesis or 8 units with a thesis. In the latter case, credit is given for thesis work. Three of the units must be in courses numbered in the 400 series, and 2 of these 3 must be taken for grades in the major field. A total of at least 4 units must be in the major field. There are no specific course requirements; individual programs are developed by the student in consultation with his or her academic adviser. At least half of the minimum units required for the degree must be in courses meeting on the Urbana-Champaign campus, or in courses meeting in other locations approved by the Graduate College for residence credit for the degree sought. Although, under certain conditions, a student holding a half-time assistantship for an academic year and a summer can obtain a master's degree in this period of time, normally such students require an additional semester. There are no foreign language requirements in the M.S. program.

Doctor of Philosophy. The degree of Doctor of Philosophy, primarily a research degree, requires from three to five years of graduate study beyond the bachelor's degree. A minimum of 24 units beyond the bachelor's degree or 16 units beyond the master's degree is required. In accordance with Graduate College regulations, two of the three stages must be completed in residence. The major area of specialization encompasses courses and research which are closely related, but the courses need not necessarily be offered by a single major department. There is no departmentwide foreign language requirement. However, the faculties of some areas of specialization

may require foreign language proficiency, if essential to the conduct of research in that area. The candidate must demonstrate a capacity for independent research by preparing an original thesis on a topic within the major field of study, must meet the qualifying requirements or examination in the area of specialization, and must pass both preliminary and final examinations.

Financial Aid. Financial aid is available in the form of fellowships, traineeships, research and teaching assistantships, and tuition and service fee waivers.

CLASSICS

(Including Classical Greek, Classical Philology, and Latin)

Chairperson of the Department: D. F. Bright
Correspondence and Information: Department of the Classics, University of Illinois at Urbana-Champaign, 2090 Foreign Languages Building, Urbana, Illinois 61801

FACULTY

Professors: J. J. Bateman, M. Marcovich, W. R. Schoedel, L. Wallach, L. Zgusta
Associate Professors: D. F. Bright, G. M. Browne, H. C. Gotoff, H. H. Hock, H. Jacobson, J. K. Newman, V. K. Robbins, R. T. Scanlan
Assistant Professors: J. Dengate, D. Sansone, D. Sutton

Graduate Degree Programs. The Department of the Classics offers graduate work leading to the Master of Arts in Classics, Latin, Greek, and the Teaching of Latin, and the Doctor of Philosophy in Classical Philology. Although the graduate program is designed to provide a thorough education in classical studies in the widest sense, students may concentrate at different stages upon Greek and Latin language and literature (including Greek and Latin patristics, medieval Latin, and Neo-Latin); classical archaeology; or, in conjunction with the appropriate department, comparative literature, ancient history, ancient philosophy, and classical linguistics. A brochure, "Regulations Governing Candidates for Advanced Degrees," and special programs for prospective secondary school teachers may be obtained from the department office.

Admission. In addition to meeting the admissions requirements of the Graduate College, applicants for admission to graduate study in the classics must ordinarily present at least 20 hours of college-level work in either Greek or Latin. Previous study of history, philosophy, and linguistics is especially recommended.

Master of Arts. The Master of Arts may be taken in classics, Greek, Latin, or in the teaching of Latin. Candidates for this degree must complete 8 units of course work, of which at least 4 units are to be in the major subject (either Greek or Latin); the remaining 4 units may be in courses offered in classics or related subjects in other departments. Of the 4 units of credit in the major subject, at least 3 are to be selected from 400-level courses (exclusive of Latin 400 and 401). Candidates for the degree in classics (Greek and Latin) will complete at least 2 of the remaining 4 units in the other language. A sight-translation examination in the major language (either Greek or Latin) and either a master's thesis or an extended essay are required for the degree. The thesis has the value of 2 units, the essay 1 unit. The candidates for the A.M. in the Teaching of Latin are exempted from a thesis or essay. The form of the examination is determined by the chairperson of the candidate's A.M. committee.

Doctor of Philosophy. The Doctor of Philosophy is offered in classical philology, which requires advanced work in Greek and Latin. Candidates for the Ph.D. program are eligible for acceptance upon completion of the master's degree. Once admitted, they must complete at least 16 units. These include 8 units of course work, with at least 4 in the major language, Greek or Latin, and at least 2 in the

other language. Five units are to be taken on the 400 level. Students may take a minor of 2 units in a related field. The department requires a reading knowledge of two tool languages, usually French and German; knowledge of one of these is to be demonstrated by the end of the first year, and of the other by the end of the second year of residence. The dissertation counts as 8 units. Work on the dessertation begins upon passing the preliminary examinations (in Greek and Latin sight translation, history of Greek and Latin literature, and a special author).

Financial Aid. Teaching assistantships and University Fellowships are available for the academic year and summer.

COMMUNICATIONS

Dean of the College of Communications: Theodore Peterson
Chairperson of the Graduate Committee in Communications: Howard S. Maclay
Correspondence and Information: Chairperson, Graduate Committee in Communications, University of Illinois at Urbana-Champaign, 222b Armory, Champaign, Illinois 61820

FACULTY

Professors: A. M. Barban, N. Denzin, M. E. Fishbein, T. Guback, J. W. Jensen, H. Maclay, R. Merritt, C. E. Osgood, T. Peterson, J. H. Schacht, R. J. Simon
Associate Professors: W. K. Archer, W. Brewer, J. G. Delia, K. Rotzoll
Assistant Professors: C. Christians, J. Haefner, A. L. Kreiling, W. May, P. Miller, D. P. Mullally, W. Rowland

Graduate Degree Program. The program for the Doctor of Philosophy in Communications is administered by the Institute of Communications Research in the College of Communications. It provides a core program in communications and permits advanced specialization in several areas: process, content, and effects of the mass media, including their political, social, and economic aspects; popular culture; persuasion and attitude change; advertising; interpersonal communication; and psycholinguistics. The program applies the methods and disciplines of the social sciences, supported by the humanities, fine and applied arts, and natural sciences, to the basic problems of human communications. It is intended for students who plan careers in teaching such communications subjects as journalism, radio-television, and psycholinguistics; scholarly research on the development, control, and ethics of the mass media; research on public opinion measurement, advertising, communication effects, psycholinguistics, and semantics; and executive jobs in government and industry requiring breadth, perspective, and a scholarly background.

Doctor of Philosophy. Students working toward a Ph.D. normally require from three to five years to complete their work. A full-time student entering the program directly upon receiving a bachelor's degree should expect to take two years of course work and a minimum of one additional year for the preparation of a dissertation. Full-time students entering with a master's degree should expect to take a munimum of one year of course work prior to embarking on the dissertation. Doctoral students must pass preliminary examinations covering course work and declared specialties and a final examination covering the dissertation. A master's degree in communications is not offered. Students desiring to complete a master's degree should consider enrolling in the Departments of Journalism or Advertising, or in one of the several departments in the social sciences.

COMPARATIVE LITERATURE

Acting Director of the Program: HENRY KAHANE

Correspondence and Information: Acting Director of Graduate Studies, Program in Comparative Literature, University of Illinois at Urbana-Champaign, 2090 Foreign Languages Building, Urbana, Illinois 61801

FACULTY

Professors: A. O. ALDRIDGE, B. BENSTOCK, W. HOLLERER, F. JOST, H. KNUST, R. MONTANO, R. J. NELSON, M. PALENCIA-ROTH, G. TIKKU

Graduate Degree Programs. The Comparative Literature Program offers graduate work leading to the degrees of Master of Arts and Doctor of Philosophy and is designed to provide a systematic study of subjects and problems common to several literatures. Its purpose is to enable students who have varied linguistic competence and preparation to explore the theory of literature and criticism; the interrelations of several literatures; the main currents, periods, and movements in literary history; the development of literary themes and types; and the relations between literature and the other arts. This interdepartmental program is assisted by an advisory committee consisting of representatives of the departments of modern languages and literatures and the classics. The student's program of study is supervised by an adviser from the Program in Comparative Literature. The journal, *Comparative Literature Studies,* is sponsored by the program.

Admission. In addition to meeting the Graduate College admissions requirements, a student entering the program should have an undergraduate major in English, the classics, or a foreign language. Majors in history and philosophy may be accepted with the special consent of the director of the program. For applicants to the Ph.D. curriculum, the A.M. will function as the qualifying test. Students entering with an A.M. from another university or from another department of this University will take the program's A.M. examination at the end of the first semester in lieu of the qualifying test.

Master of Arts. The candidate must demonstrate a competency in at least two foreign languages, one of which may be a non-Western language, as well as in English. Latin is necessary for students planning to specialize in the Middle Ages, the Renaissance, or Neoclassicism. Competency in the languages offered is measured either by the successful completion of one advanced course in the literature of each of the languages chosen or by passing an examination administered by the Program in Comparative Literature with the assistance of an expert in the language concerned. This choice is intended to provide for languages which may not be taught in regular departments.

The candidate must acquire 8 units of credit including a course in theory of literature (Comparative Literature 401) and two seminars in Comparative Literature selected from Comp. Lit. 451, 461, 471, and 481, taught by members of the Comparative Literature faculty. The other 5 units should be taken in two or three national literatures in a distribution approved by the adviser; at least 5 of 8 units should be taken in courses at the 400 level. The candidate should pass a written examination, based on a reading list, which is designed to test knowledge of literary history as well as ability to interpret a literary or critical text.

Doctor of Philosophy. A candidate for the Doctor of Philosophy degree must fulfill the general requirements of the Graduate College in addition to those specified above for the master's degree. Competency must be demonstrated in at least three foreign languages as well as in English. These three languages should coincide with those vital to the student's dissertation and area of specialization. The candidate should choose at least 4 units from Comparative Literature seminars taught by members of the Comparative Literature faculty. Four additional units of work at the 400 level should be taken in courses regularly offered by the literature departments; among these, courses crosslisted with Comparative Literature are especially

recommended. The candidate is responsible for a knowledge of the history of the literature in one modern language. The student also selects a period of major interest, and is responsible for a knowledge of two other literatures in this period, which are considered as minors. The periods may be the Middle Ages, Renaissance, Neoclassicism and the Enlightenment, or modern (nineteenth and twentieth centuries). A preliminary examination, a four-part written examination based on the individual program, and an oral examination, with emphasis on the dissertation project, must be passed. The candidate must present an acceptable dissertation embracing several national literatures and pass a final oral examination on the dissertation.

Financial Aid. A limited number of University Fellowships, tuition and service fee waivers, and teaching assistantships, in cooperation with other departments, are available.

COMPUTER SCIENCE

Head of the Department: J. N. Snyder
Chairperson of the Committee on Fellowships, Assistantships, and Admissions: W. J. Kubitz
Correspondence and Information: J. N. Snyder, Head of the Department of Computer Science, University of Illinois at Urbana-Champaign, 222 Digital Computer Laboratory, Urbana, Illinois 61801

FACULTY

Professors: C. W. Gear, D. Kuck, C. L. Liu, S. Muroga, T. A. Murrell, W. J. Poppelbaum, S. R. Ray, J. E. Robertson, D. L. Slotnick, J. N. Snyder
Associate Professors: G. G. Belford, M. Faiman, H. G. Friedman, Jr., W. J. Kubitz, J. W.-S. Liu, R. S. Michalski, E. M. Reingold, A. H. Sameh, P. E. Saylor, D. S. Watanabe
Assistant Professors: R. H. Campbell, W. J. Hansen, G. R. Kampen, D. H. Lawrie, M. D. Mickunas, D. A. Plaisted, R. D. Skeel, T. R. Wilcox

Graduate Degree Programs. The Department of Computer Science offers graduate work leading to the degrees of Master of Science in Computer Science, Doctor of Philosophy in Computer Science, Master of Science in the Teaching of Computer Science, and a professional degree, Master of Computer Science. Areas of specialization are analysis of algorithms and theory of computation, combinatorics, computer-aided instruction, computer applications in physical and social sciences, computer networks, computer organization, digital computer arithmetic, digital systems design, display systems, hardware systems design, information retrieval, programming languages, numerical analysis, pattern recognition, software systems, and switching theory.

RESEARCH DEGREES (M.S. and Ph.D.)

Master of Science. The student must complete 8 units and write a master's thesis. Of these units, a minimum of 4 must be graduate courses in computer science. Three courses must be taken at the 400 level, and at least two of these must be in computer science. One unit of Computer Science 499, Thesis Research, may be used as one of these 400-level computer science courses. The student must maintain a minimum grade-point average of 4.0 for all graduate and computer science courses. In addition, the student must satisfy the Graduate College residence and time limit requirements and successfully pass the general examination.

General Examination. Every M.S. and Ph.D. student is expected to take a general examination at the beginning of the first semester of graduate study in the department. The examination covers five basic areas: computer hardware, computer logic

design, computer software, numerical analysis, and theory of computation. The student must pass in logic design, software, and any two of the other three areas and must retake the examination in any areas failed until four have been passed. A student may take the entire examination or a portion thereof up to a maximum of three consecutive offerings. A student will not be allowed to register in the department after failing to complete this examination by the end of the third semester after enrollment. A syllabus for this examination has been prepared to aid in study and preparation. It is available as DCS Report Number UIUCDCS-R-74-645.

Doctor of Philosophy. The student must declare a major field of study in computer science, and an approved 4-unit minor outside of computer science, or two minors of 2 units each.

The student must first satisfy the general examination (described above) and the 8-unit requirement for the Master of Science in Computer Science as described above but need not write an M.S. thesis if an M.S. degree is not sought. The student must then successfully complete 8 units of graduate course work beyond the requirements for the M.S. degree and perform satisfactory research culminating in a Ph.D. thesis. Six of the total 16 course-work units must be graduate computer science courses. The student must also pass the qualifying examination, the preliminary examination, and the final examination as described below, and must satisfy the Graduate College residence and time limit requirements. For degree certification, a 4.0 grade-point average must be maintained for all graduate and computer science courses.

Qualifying Examination. This oral examination must be passed by each Ph.D. student in computer science prior to beginning Ph.D. thesis research. The student must take the examination in one of the five general areas: computer organization and logic design, hardware, numerical analysis, software, and theory of computation. The student's performance on this oral examination and his or her previous record, including graduate courses and general examination performance, will be considered in deciding whether he or she passes the qualifying examination. The qualifying examination may not be taken until the general examination has been passed. Students entering the department with fewer than 8 units must take the qualifying examination no later than their fourth semester. Students entering the department with 8 or more units must take this examination no later than their third semester.

Preliminary Examination. The purpose of the preliminary examination is to ensure that the chosen thesis topic is reasonable and that the student seems capable of carrying out the thesis research. It is an oral examination administered by five faculty members, including the thesis adviser.

Final Examination. The final examination must be passed by each Ph.D. student before receiving the Ph.D. degree. The purpose of the examination is to determine that the thesis research has been carried to a point where the degree is warranted, and to ensure that the research results have been adequately recorded. The student's preliminary examination committee administers this oral examination.

Admission to the M.S. and Ph.D. Programs. The Department of Computer Science will consider an application for admission to the M.S./Ph.D. program if the applicant: submits the results of the Verbal and Quantitative Graduate Record Examination, holds a baccalaureate or higher degree equivalent to that granted by the University of Illinois, has taken 20 semester hours of computer science, electrical engineering, mathematics, or physics, and has had any three of the following five courses (or their equivalent):

CS 221 Machine Language and System Programming
CS 257 Introduction to Numerical Analysis
CS 264 Introduction to the Theory of Digital Machines
CS 273 Introduction to the Theory of Computation
CS 281 Introduction to Computer Hardware

In addition, it is strongly recommended that the applicant submit an advanced test Graduate Record Examination score in an area commensurate with his or her background.

The Graduate College admissions requirements apply. In case of deficiencies (either departmental or Graduate College), a student may still be admitted for graduate work, but must remove these deficiencies in the first year.

PROFESSIONAL DEGREES

Master of Computer Science. The Master of Computer Science program is designed to meet the educational needs of students who enter without an extensive computer science background but expect to be involved with computers in their professional careers. It is a professional program which would not ordinarily lead to the doctorate. The purpose of the M.C.S. program is to develop professionals who can apply fundamental concepts and methods of computer science to fields where computers are of importance.

The program requires sixteen courses. Of these, thirteen are normally courses which carry graduate credit; the other three are basic courses (required for most entering students) constituting 9 hours of credit. These sixteen courses include 4 units of individual study and a core of twelve courses. The student carries out an individual study program under the supervision of a faculty adviser and prepares formal documentation of the results. Candidates with a strong background in both science and computer applications may graduate with a minimum of 13 units. Those lacking a computer applications background must pursue an approved minor in an appropriate applications field. For degree certification a 4.0 grade-point average must be maintained for all graduate and computer science courses.

Master of Science in the Teaching of Computer Science. The objective of this program is to prepare competent and well-qualified teachers of computer science for undergraduate colleges, junior colleges, vocational-technical colleges, and high schools.

Candidates for the Master of Science in the Teaching of Computer Science must earn 4 units in computer science, 2 units in education, and 2 units in electives. The electives must be chosen as a sequence for specialization in some area relevant to computer science education.

Each student is required to complete a teaching project in computer science. This requirement will normally be fulfilled in connection with specified course work in the curriculum, electives, individual study courses, or by virtue of the student's current or past employment. For degree certification a 4.0 grade-point average must be maintained for all graduate and computer science courses.

Admission to the Professional Master's Programs. The Graduate College admissions requirements apply. The Department of Computer Science will consider applications for admission to these programs if the applicant holds a baccalaureate or higher degree equivalent to that granted by the University of Illinois and has had at least one course in computer programming.

A brochure giving the details of these programs and their requirements is available from the department.

DAIRY SCIENCE

Head of the Department: K. E. Harshbarger
Correspondence and Information: Department of Dairy Science, University of Illinois at Urbana-Champaign, 315 Animal Sciences Laboratory, Urbana, Illinois 61801

FACULTY

Professors: M. P. Bryant, J. R. Campbell, C. L. Davis, K. E. Harshbarger, R. L. Hays, B. L. Larson, J. R. Lodge
Associate Professors: D. E. Bauman, J. H. Clark, C. N. Graves, M. Grossman, J. L. Robinson, S. L. Spahr
Assistant Professors: C. R. Baumrucker, R. B. Hespell, A. J. Lee, R. B. Rindsig

Graduate Degree Programs. The Department of Dairy Science offers graduate work leading to the Master of Science and Doctor of Philosophy degrees. Fields of specialization in dairy science include biochemistry, genetics, management, microbiology, nutrition, and physiology of lactation or reproduction.

Master of Science. In addition to Graduate College requirements, the student must demonstrate proficiency in physical and biological sciences at the undergraduate level and interest in agricultural sciences. A minimum of 8 units of credit, including 5 units of lecture and laboratory classes, ½ unit of seminar, and 2 units of thesis research, is required. At least 3 units of credit must be in 400-level courses, 2 of these in dairy science. The student is expected to complete the M.S. degree within a two-year period. A comprehensive oral examination concerning the thesis and the disciplines used in the field of dairy science is required. A thesis is required. The thesis requirement may be waived by petition to the department and completion of a minimum of 9 units of credit and a comprehensive oral examination.

Doctor of Philosophy. The student must have completed the M.S. degree in a biological science and must have demonstrated an ability to conduct scientific research and to think logically and clearly. A grade-point average in excess of 4.0 (A = 5.0) is required in lecture and laboratory courses taken for the M.S. degree. A minimum of 7 units of advanced formal courses, 1 unit of seminar, and 8 units of thesis research beyond the M.S. is required. The advanced course requirements depend upon the area of study in which the student specializes and upon career objectives. The student is expected to complete the Ph.D. degree within a three-year period beyond the M.S. An oral preliminary examination to assess the ability and preparation of the candidate for dissertation research is required. The preliminary examination is generally taken after completion of formal course work and before enrollment in more than 12 units of credit beyond the M.S. A dissertation is required, and candidates must pass a final oral examination on the dissertation topic.

Financial Aid. Fellowships and graduate assistantships are available on a competitive basis. For M.S. candidates, financial support is limited to two years unless extended by departmental action. Students who accept financial aid from the department are expected to complete their program of study before accepting other commitments.

DANCE

Acting Head of the Department: Patricia K. Knowles
Correspondence and Information: Graduate Program, Department of Dance, University of Illinois at Urbana-Champaign, 4-305 Krannert Center for the Performing Arts, 500 South Goodwin Avenue, Urbana, Illinois 61801

FACULTY

Associate Professors: B. Blossom, P. Knowles, O. Kostock, W. Ward
Assistant Professors: C. Hardy, T. Kalmon, J. Landovsky

Admission. The Department of Dance offers graduate work leading to the Master of Arts degree. Prerequisites for admission are: (1) an undergraduate degree in dance comparable to that granted by the University of Illinois, or equivalent experience; students who are deficient in undergraduate course work may be admitted, but will be expected to make up any deficiencies; (2) demonstrated technical skill and choreographic ability; candidates must pass a qualifying audition to confirm technical proficiency and to demonstrate facility in choreography; (3) evidence of academic achievement and the ability to work independently. Admission priority will be given to full-time students who will be active degree candidates.

Graduate Degree Program. The Master of Arts Program in Dance is an individualized program of study designed to provide intensive experience in the areas of

choreography, performance, and teaching. The core program requirements include technique classes in modern and ballet each semester in residence (up to 2 units); the choreography and staging of a substantive dance work which meets the approval of the graduate faculty (2 units), and the preparation and defense of a written description of the choreographic process. Additional course requirements include dance production (½ unit) and a seminar on current issues and topics (1 unit). Students who are not teaching are required to enroll in a supervised teaching practicum for a minimum of one semester (½ unit).

Candidates for the A.M. degree must earn a minimum of 8 units, 3 of which must be at the 400 level. Electives in the areas of improvisation, dance forms, notation, history, theory and philosophy, repertory, performance, independent study, and accompaniment may be chosen in consultation with the major adviser. Up to 2 of the 8 units required for graduation may be taken from related areas outside of the department.

The residence requirement for each student will be determined by the graduate faculty at the time of the audition. There are two possibilities:

1. One-Year Program. For exceptionally qualified students with no program deficiencies. Students in this category must audition a solo and a group work (videotape) and qualify for admission to Dance 401, Graduate Choreography.
2. Two-Year Program. Students in this category are admitted on limited standing and must audition a solo for composition placement. Continued enrollment in the program is contingent upon satisfactory progress and the presentation of an acceptable group work within a period of two semesters in order to qualify for Dance 401, Graduate Choreography.

Financial Aid. A limited number of fellowships, assistantships, and tuition and service fee waivers is available to qualified students. Applicants for financial aid must audition in January for admission the following fall.

ECONOMICS

Chairperson of the Department: C. M. Sprenkle
Director of Graduate Studies: F. R. Shupp
Correspondence and Information: Department of Economics, University of Illinois at Urbana-Champaign, 330 Commerce Building (West), Urbana, Illinois 61801

FACULTY

Professors: W. Baer, R. Brandis, H. J. Brems, J. E. Due, R. Ferber, M. Frankel, F. M. Gottheil, P. T. Hartman, A. J. Heins, D. R. Hodgman, G. G. Judge, R. E. Kihlstrom, W. W. McMahon, J. R. Millar, L. J. Mirman, D. W. Paden, J. B. Parrish, J. D. Phillips, R. W. Resek, T. Sawa, P. Schran, J. Scoville, F. R. Shupp, J. L. Simon, C. M. Sprenkle, K. Taira, T. Takayama, P. Uselding, P. J. Wells, T. A. Yancey

Associate Professors: R. J. Arnould, M. Ferber, R. W. Gillespie, R. D. Husby, J. H. Leuthold, L. D. Neal, A. Postlewaite, R. N. Schoeplein, S. W. Steinkamp, H. F. Williamson, Jr.

Assistant Professors: J. Atack, D. G. Bagby, F. Blau, J. Brueckner, M. B. Canzoneri, D. Coes, T. S. Friedland, R. Harstad, W. E. Hendricks, A. M. Isserman, L. Kahn, M. Okuno, J. L. Smith, I. Zilcha

Graduate Degree Programs. The Department of Economics offers graduate work leading to the Master of Arts, Master of Science, and Doctor of Philosophy degrees. The candidate for an advanced degree may specialize in the following fields: advanced economic theory; history of economic thought; public finance; monetary theory and policy; international economics; economic history; labor economics; growth and de-

velopment; comparative economic systems; urban and regional economics; mathematical economics; econometrics; industrial organization; transportation; and human resource economics.

Admission. In addition to the standard undergraduate preparation in economics, the student is expected to have had at least two semesters of calculus and one of linear algebra. The results of the Graduate Record Examination should accompany applications for admission. The Graduate College admissions requirements apply.

Master of Arts or Master of Science. There are two ways to earn the A.M. or M.S. Students seeking only a master's degree are encouraged to take Program I, which requires 8 units of credit and submission of an acceptable thesis. The 8 units must include 2 units of theory, 1 unit of statistics (or demonstration of proficiency), and 1 unit of economic history or history of economic thought (or demonstration of proficiency), as well as 2 units of thesis work. Program II requires 12 units of work including the 4 units of basic course work described for Program I, 2 units in a specialized field in economics, and 6 additional units, 3 in economics and 3 in electives.

Doctor of Philosophy. A total of 24 units of study must be completed. Requirements include 1 unit in economic history, 1 unit in history of economic thought, 2 units in statistics and econometrics (some or all can be met by demonstration of proficiency), and 8 doctoral dissertation units. The candidate is also required to pass written preliminary examinations in economic theory and in three specialized fields including at least two in economics (course work with appropriate grades may be substituted for one of the three examinations). The normal preparation for these preliminary examinations is 4 units of study in economic theory and 2 units of study in each of the specialized fields. In addition, the candidate is required to give an oral defense of the dissertation proposal and pass an oral final examination covering the research. Students with an appropriate background in economics and mathematics who devote full time to graduate work can complete the Ph.D. in three years beyond the bachelor's degree. An additional year or more is usually necessary, however, for those holding part-time assistantships.

EDUCATION

(Including Administration, Higher, and Continuing Education; Educational Policy Studies; Educational Psychology; Elementary and Early Childhood Education; Secondary Education; Special Education; and Vocational and Technical Education)

Dean of the College of Education: J. Myron Atkin

Correspondence and Information: Terry Denny, Assistant Dean for Graduate Programs, College of Education, University of Illinois at Urbana-Champaign, 110 Education Building, Urbana, Illinois 61801

FACULTY

Professors: R. C. Anderson, J. M. Atkin, P. G. Braunfeld, M. Burlingame, J. R. Burnett, J. C. Campione, L. B. Cohen, R. J. Colwell, C. B. Cox, R. B. Davis, T. Denny, D. Durkin, J. Easley, R. H. Ennis, R. N. Evans, E. L. Evertts, W. Feinberg, L. R. Goulet, N. E. Gronlund, P. E. Hemp, R. A. Henderson, B. Hicks, J. Hill, K. T. Hill, L. G. Humphreys, J. R. Jenkins, W. D. Johnson, R. S. Jones, L. J. Jordan, C. J. Karier, M. B. Karnes, L. G. Katz, A. B. Knox, H. H. Lerch, R. L. Linn, M. L. Maehr, T. Manolakes, J. E. McGill, C. J. McIntyre, W. P. McLure, F. McMurray, L. E. Metcalf, A. Peshkin, H. G. Petrie, A. C. Purves, S. P. Quigley, J. D. Raths, F. A. Rodgers, S. Rosen, B. V. Rosenshine, L. J. Rubin, T. J. Sergiovanni, P. B. Shoresman, J. M. Slater, R. A. Smith, H. T. Spitze, B. Spodek, R. L. Sprague, R. E. Stake, M. M. Tatsuoka, R. M. Tomlinson, K. J. Travers, L. R. Tucker, J. L. Walker, J. S. Zaccaria

Associate Professors: E. F. Anderson, T. H. Anderson, S. R. Asher, L. Braskamp, R. K. Brown, A. B. Campione, F. S. Coombs, J. E. Erickson, J. Farmer, J. A. Fley, M. Gold, O. E. Gould, M. B. Griggs, A. Groteluеschen, L. W. Heal, G. A. Hoke, E. R. House, F. L. Johnson, H. R. Kaczkowski, K. R. Koenke, M. S. Lilly, J. W. Loeb, T. J. Long, A. L. Madsen, T. McGreal, J. L. Morgan, H. Moses, A. Ortony, R. F. Payette, M. J. Phillips, W. H. Redd, S. J. Savignon, M. Shorish, H. J. Sredl, J. Stern, H. T. Trueba, P. C. Violas, M. G. Wade, R. W. Walker, J. L. Wardrop, C. M. Weller, C. K. West, I. D. Westbury, K. G. Witz, B. A. Yates

Assistant Professors: R. Albert, J. D. Anderson, R. M. Becher, C. Blankenship, H. G. Bloland, D. Brandenburg, E. R. Bredo, J. K. Brun, G. R. Canney, E. J. Copeland, J. R. Dennis, D. L. Essex, H. S. Farmer, W. H. Foster, V. P. Franklin, T. G. Geske, B. R. Hare, L. F. Hillen, J. J. Hirstein, E. Z. Hooker, G. R. Karlan, S. J. Kilmer, S. R. Levy, J. Mason, E. F. McClure, R. E. Nelson, K. M. Newell, J. C. Ory, D. L. Pierce, S. Pogrow, P. S. Riegel, E. M. Ritter, F. Rusch, M. A. Siegel, R. H. Smock, R. J. Spiro, B. E. Swanson, P. W. Thurston, D. R. Tunnell, M. C. Vittetoe, J. A. Walker, J. Walters, N. Weinberg, B. L. Wilcox

Professors Emeritus: H. S. Broudy, J. T. Hastings, J. M. Hunt, W. J. Moore, C. H. Patterson, L. J. Phipps, F. M. Raubinger, R. H. Simpson

Graduate Degree Programs. The College of Education offers graduate work leading to the Master of Education, the Master of Arts, the Master of Science, the Advanced Certificate, the Doctor of Education, and the Doctor of Philosophy degrees.

Graduate students in the College of Education may enroll in one of the seven departments within the college listed at the beginning of this statement. The following suggests the broad range of specialities available within the college: agricultural education; aesthetic education; bilingual-bicultural education; business, office, and distributive education; comparative education; continuing and adult education; computer applications in education; counseling psychology; early childhood education; educational administration and supervision; educational psychology; elementary school subject specialities (mathematics, language arts, science, social sciences); statistics and measurement; health occupations education; higher education; history of education; home economics education; human development; industrial education; learning and instruction; philosophy of education; quantitative and evaluative research methodologies; reading; rehabilitation counseling; secondary education (English, mathematics, music, physical education, science, social science); sociocultural perspectives; special education: (a) special learning and behavior problems, severe behavioral handicaps, early childhood education, skills improvement, and (b) program administration; teacher education (elementary, secondary, psychological, special). Other areas of specialization within education may be developed by the student and adviser.

Certification. State certification, as a teacher or administrator, is required for advanced graduate study in some fields. Certification can be achieved through special arrangements and additional work when it is desired or required as part of a program of study. The Council on Teacher Education functions as the all-University governance system for certification. Graduate students who wish to qualify for the council's recommendation for a teaching certificate must complete the appropriate undergraduate program or its equivalent. Individual exceptions must be sought via petition to the council. Students are invited to contact the coordinator of the Council on Teacher Education to ascertain the approval status of each program with the Illinois Office of Education after 1979.

Master of Education.

Admission. Students may be considered for admission if they are: (1) graduates of an institution awarding a baccalaureate or equivalent degree comparable to that of the University of Illinois; (2) adequately prepared for advanced study as demonstrated by previous experience, personal qualifications, and scholastic records; and (3) recommended by the proposed department of study. The Graduate College

admissions requirements apply. Some departments in the College of Education require additional test scores of applicants.

Program Description. Within each of the departments in the College of Education exists a rich variety of practice-centered programs adaptable to the interests of beginning graduate students. The Master of Education is a professional degree designed for those students who seek a practical understanding for work in the educational professions.

Requirements. A minimum of 8 units of study is required, except in educational administration where there is a 10-unit requirement. Students are required to take two ½-unit courses in the social and philosophical foundations area within the Department of Educational Policy Studies. One ½-unit course is selected from the social foundations area: Educational Policy Studies 300, 302, 303, 304A, 310, and 315. A second ½-unit course is selected from the philosophical foundations area: 301, 304B, 305, 306, 307, and 308. Students may take proficiency examinations in any of these required courses. Three units of 400-level courses in education or two 400-level courses in education plus one 300-level course in the student's teaching field are required. The program is completed by three additional 300- or 400-level courses selected by the student in consultation with the academic adviser. Individual departments in the college may require courses beyond these minima to complete a student's program. The credit–no credit option may not be used to meet the minimum 8-unit requirement for this degree. In general, candidates for the Master of Education are expected to take at least 2 units in fields other than education, particularly if the specialization is in secondary education. There are no foreign language or research tool requirements. There are no examinations beyond those given in the courses. No thesis is required.

Residence. Four of the 8 minimum units must be taken in residence on the Urbana-Champaign campus. Summer session courses can be used to fulfill residence requirements, and a maximum of 2½ units may be taken in a summer session. "R" courses are specially designated courses offered off campus throughout the state. The prefix "R" indicates they may be counted toward meeting the 4-unit minimum residence requirement.

Master of Arts and Master of Science. Admission requirements are the same as those for the Master of Education degree.

Program Description. An extensive offering of research-based programs may be found in the college. All the specialities listed earlier may be pursued from a research perspective. The A.M. and M.S. are research-oriented degrees designed for students who seek research careers in education-related fields. Many students enter these programs with the intent of eventually pursuing a doctoral program leading to the Ed.D. or Ph.D. degree.

Requirements. A minimum of 8 units of study is required, except in educational administration where there is a 10-unit requirement. Students are required to take two ½-unit courses in the social and philosophical foundations area within the Department of Educational Policy Studies. One ½-unit course is selected from the social foundations area: Educational Policy Studies 300, 302, 303, 304A, 310, 315. A second ½-unit course is selected from the philosophical foundations area: 301, 304B, 305, 306, 307, and 308. Students may take proficiency examinations in any of these required courses. Individual departments may require courses beyond these minima to complete a student's program. The credit–no credit option may not be used to meet the minimum 8-unit requirement for this degree. No more than 2 units of thesis credit count toward the minimum 8 units.

These programs require a year of resident study. There are no foreign language or research tool requirements. Each student must defend the required thesis in an oral examination before a committee of three faculty chaired by the student's adviser.

Advanced Certificate in Education.

Admission. A master's degree in an appropriate field and two years of successful professional experience are required for admission to the Advanced Certificate program. Summer session courses can be used to fulfill residence requirements. A

maximum of 2½ units may be taken in a summer session. "R" courses are specially designated courses offered off campus throughout the state. The prefix "R" indicates they may be counted toward meeting the 4-unit minimum residence requirement. Some Advanced Certificate programs require students to submit Miller Analogies test scores.

Program Description. The Advanced Certificate may be pursued in administration, higher, and continuing education; educational psychology; elementary and early childhood education; secondary education; special education; and vocational and technical education. The Advanced Certificate program is intended for students who desire a planned course of study beyond the master's degree, but do not wish to pursue the type of scholarly work typically expected in a doctoral program.

Requirements. A minimum of 8 units beyond the master's degree is required for the degree. Four units must be at the 400 level. A student who has not previously taken two courses in the Educational Policy Studies series from 300 through 307 and both Educational Psychology 311 and 312 must do so or pass proficiency examinations for these courses. The credit–no credit option may not be used to satisfy the minimum requirements for this degree. Four units must be taken in residence. Up to 4 units of work may be taken in extramural courses.

There are no foreign language or research tool requirements. There are no examination requirements beyond those given in courses. There is no thesis requirement.

Doctor of Education.

Admission. Applicants for study leading to doctoral degrees must submit Miller Analogies test scores, a confidential information form, and a complete application for admission, including three letters of reference and the graduate appointment form. The applicant must hold a master's degree with a major in education or another related subject from an institution awarding a degree comparable to the University of Illinois. The general admissions requirements of the Graduate College must be met. The Department of Educational Psychology requires applicants for all graduate degrees to submit Miller Analogies and Doppelt Mathematical Reasoning test scores.

Program Description. Students may study any of the broad range of specialities listed on page 84. Programs leading to the Doctor of Education degree are designed to provide advanced professional training and to develop further ability in the scholarly study of professional practice–centered problems.

Requirements. Sixteen units of course work beyond the master's degree are required. Extramural credit may not be counted in this requirement. Within the required 16 units, students must complete two perspective course options of 2 units each, designed to help them understand and interpret their developing practitioner-scholar role. Options are chosen from an approved list of courses in several areas. Between admission and completion of degree requirements, an Ed.D. student must complete a supervised field work experience for which from 1 to 4 units credit may be awarded.

Minimum residence requirements may include either two consecutive semesters with at least 3 units course work in each, or one semester with at least 3 units plus at least 1½ units in the summer session immediately preceding or following.

Near the end of course work and before admission to the preliminary oral, the applicant must take ten hours of written examinations, eight in the special field of study and two in research methodology. Each portion of the examination is read and evaluated separately by three readers. All parts of the examination must display competent doctoral work to all readers.

A thesis is required in addition to the 16 units of course work.

Doctor of Philosophy.

Admission. The applicant must hold a master's degree with a major in education or another related subject from an institution awarding a degree comparable to the University of Illinois. An applicant who has not written a master's thesis is required to prepare, submit, and defend an equivalent paper. The Graduate College admissions requirements apply. Applicants must submit Miller Analogies test scores, a confidential information form, and a complete application for admission, including three

letters of reference and a graduate appointment form. The Department of Educational Psychology also requires applicants for all graduate degrees to submit Doppelt Mathematical Reasoning test scores.

Program Description. Students may study any of the specialities listed on page 84. The Ph.D. program is planned by each student with an adviser to develop the student's ability to do scholarly research in a specialized field of education.

Requirements. Eight units of course work beyond the master's degree and an additional 8 units of thesis credit are required for the Ph.D. Each Ph.D. candidate in the College of Education completes, as a part of the graduate program, an approved supervised professional work experience that consists of at least half-time work for a semester. This requirement is to be completed during the period between admission and completion of degree requirements. Sixteen units of resident credit are required. Acceptance of credit for work earned elsewhere does not reduce the resident credit requirement. A residence period, beyond the master's, must include two successive semesters in each of which the student takes a minimum of 3 units.

A student is required to demonstrate competence in one of several research technique options. This requirement is in addition to the minimum of 8 units of course work. One of the options available is competence in a foreign language. Each research option requires 4 units of course work or its equivalent. Research option courses may not be taken on a credit–no credit basis.

A Ph.D. candidate must complete eight hours of written examinations in an area of specialization. Examinations are taken in two parts of four hours each. Each portion of the examination is read and evaluated separately by at least three readers. All parts of the examination must display competent doctoral work to all readers.

A Ph.D. candidate must complete a thesis in accordance with the general requirements of the Graduate College for the Ph.D.

Financial Aid. All major doctoral programs have teaching and research assistantships available. Some fellowships and tuition and service fee waivers are also available. A majority of all doctoral students receive some form of financial aid during their period of study. To apply for financial aid, request the necessary form from one of the seven departmental offices listed on page 83.

ELECTRICAL ENGINEERING

Head of the Department: E. C. Jordan

Correspondence and Information: Department of Electrical Engineering, University of Illinois at Urbana-Champaign, 155 Electrical Engineering Building, Urbana, Illinois 61801

FACULTY

Professors: F. T. Adler, G. E. Anner, R. B. Ash, D. L. Bitzer, S. A. Bowhill, R. M. Brown, B. E. Cherrington, R. T. Chien, P. D. Coleman, J. B. Cruz, Jr., G. Deschamps, F. Dunn, J. D. Dyson, W. L. Emery, E. W. Ernst, O. L. Gaddy, A. H. Haddad, P. Handler, D. F. Hang, M. S. Helm, C. D. Hendricks, Jr., N. Holonyak Jr., D. F. Holshouser, E. C. Jordan, P. Kokotovic, B. C. Kuo, S. W. Lee, C. H. Liu, Y. T. Lo, P. E. Mast, W. Mayeda, P. E. Mayes, G. A. Metze, G. H. Miley, R. Mittra, D. E. Muller, S. Muroga, T. A. Murrell, W. R. Perkins, D. Pines, W. J. Poppelbaum, F. Preparata, N. Rao, S. R. Ray, J. E. Robertson, S. N. Roscoe, C. T. Sah, C. F. Sechrist, Jr., L. G. Smith, G. E. Stillman, B. G. Streetman, G. W. Swenson, Jr., T. N. Trick, R. J. Turnbull, M. E. Van Valkenburg, J. T. Verdeyen, N. Wax, K. C. Yeh

Associate Professors: W. G. Albright, M. L. Babcock, J. W. Beauchamp, D. P. Bertsekas, R. W. Burtness, D. H. Cooper, J. M. Crowley, E. S. Davidson, T. A. DeTemple, P. R. Egbert, M. Faiman, C. S. Gardner, K. Hess, B. J. Hunsinger, R. L. Johnson, P. W. Klock, W. J. Kubitz, E. A. Mechtly, H. Merkelo, M. B. Pursley, P. L. Ransom, H. C. Slottow, L. Wozniak

Assistant Professors: J. A. Abraham, C. A. Cain, A. W. Dipert, R. M. Fish, R. A. Flower, W. K. Jenkins, C. N. Judice, K. Kim, D. J. Leverenz, W. D. O'Brien, Jr., W. H. Olson, H. V. Poor, B. R. Rau, D. V. Sarwate, P. W. Sauer, M. S. Schlansker, P. D. Schomer, R. B. Uribe, D. L. Waltz

Graduate Degree Programs. Graduate study in electrical engineering, leading to the degrees of Master of Science and Doctor of Philosophy, is offered in four general areas: circuits and systems, which includes network synthesis, nonlinear circuits, control systems, and optimization; computers and information systems, which includes computers, switching theory, information theory, communication theory, information retrieval, and artificial intelligence; electromagnetic fields, which includes antennas, propagation, aeronomy, radio location, and holography; and physical and quantum electronics, which includes solid state theory and devices, electrophysics, optical electronics, plasmas, gaseous electronics, and charged particles. In addition, the department cosponsors or participates in interdisciplinary areas of specialization in bioengineering, nuclear engineering, radio astronomy, biomedical instrumentation, ultrasonics, and electronic music.

Admission. To be eligible for admission, a prospective student must have completed, with a grade-point average of 4.0 or better (A = 5.0), an electrical engineering curriculum substantially equivalent to that of the University of Illinois. Graduates of curricula in the physical sciences and mathematics may also be admitted to advanced study if they have the necessary background to profit from graduate work in electrical engineering.

Master of Science. A minimum of 8 units, including a maximum of 2 units of thesis research, must be completed for the master's degree. At least 4 units must be 400-level courses in electrical engineering (up to 2 thesis units may be counted), including one from a list of specific courses in each of two of the four basic areas. Courses which are required in the undergraduate curriculum at the University of Illinois at Urbana-Champaign cannot be applied to the credit requirements for an advanced degree. No final examination is required for the M.S. degree.

Doctor of Philosophy. All students desiring to enter the doctoral program must take the electrical engineering qualifying examination during the term they earn their seventh unit of graduate credit excluding Electrical Engineering 499, Thesis Research, and Electrical Engineering 490, Seminar in Special Topics. Students who enter with the master's degree take the examination during the first term here. Admission to the doctoral program is based upon the quality of the course work, the qualifying examination, and an assessment of the ability of the candidate to do independent research work.

Eight units of course credit beyond the master's degree or the equivalent, successful completion of the preliminary examination, 8 units of thesis research, a satisfactory thesis, and satisfactory defense of the thesis in a final examination are minimum requirements for the degree of Doctor of Philosophy. If required by the adviser, a student must have one or two minors in addition to the major. A single minor requires 4 units in one field outside the major field, at least 1 of which must be at the 400 level. If two minors are required, each must consist of at least 2 units. Advanced courses in mathematics, physics, physiology, chemistry, nuclear engineering, and other branches of engineering are recommended minors. No foreign language proficiency is required.

Extramural Study. The department offers extramural graduate courses administered by the Office of Continuing Education and Public Service leading to the Certificate in Engineering granted by the office. Requirements for the M.S. degree can be fulfilled by one semester of residence after completing the requirements of the certificate program. For information about this certificate program, write to the Office of Continuing Education and Public Service, University of Illinois at Urbana-Champaign, 112 Illini Hall, Champaign, Illinois 61820.

Under special circumstances, it may be possible to complete the M.S. degree

off campus by taking extramural graduate courses that are designated for residence credit, including the M.S. thesis requirement. Such cases are considered on an individual basis upon petition to the departmental graduate committee.

ENGLISH

Head of Department: Keneth Kinnamon
Director of Graduate Studies: Emily S. Watts
Correspondence and Information: Director of Graduate Studies, Department of English, University of Illinois at Urbana-Champaign, 100 English Building, Urbana, Illinois 61801

FACULTY

Professors: A. L. Altenbernd, R. Barksdale, N. Baym, B. Benstock, E. Brandabur, J. J. Campbell, D. Curley, E. H. Davidson, J. P. Frayne, J. Friedman, R. Halsband, G. Hendrick, A. G. Holaday, J. R. Hurt, K. Kinnamon, D. V. Kramer, L. Lieberman, R. W. Rogers, C. Sanders, C. H. Shattuck, R. B. Shuman, J. Stillinger, E. Watts, B. F. Wilkie, H. W. Wilson
Associate Professors: G. Adelman, R. Carringer, H. C. Cole, J. Dundas, A. Dussinger, P. Friedman, P. Garrett, A. Guibbory, F. E. Hodgins, P. Jacobs, A. Kaufman, U. M. Kaufmann, C. Kyle, D. Majdiak, H. Marder, D. Matthews, F. Moake, M. Mullin, C. Nelson, R. L. Schneider, G. Scouffas, M. Shapiro, B. Smalley, J. C. Stubbs, A. M. Tibbetts, J. B. Trahern, M. Uroff, L. Waldoff, R. Wheeler
Assistant Professors: D. Baron, L. Danielson, J. L. Hinely, W. D. Kay, J. Klein, J. F. Stottlar, Z. Sullivan

Graduate Degree Programs. The Department of English offers programs of study leading to the Master of Arts, the Master of Arts in the Teaching of English, and Doctor of Philosophy degrees. The Ph.D. program is, in general, designed to educate and train teacher-scholars who will take up positions in colleges and universities throughout the country. The Master of Arts programs may be either a first step toward the Ph.D. degree or a final educational stage for qualified students who wish to pursue their knowledge of English and American language and literature beyond the undergraduate level. There is no creative writing program.

Admission. A student who wishes to be considered for admission to graduate work in English must present the equivalent of at least 20 semester hours of undergraduate college work in English and American literature, excluding required college work in rhetoric or composition. Applicants are required to submit Graduate Record Examination scores. Because applications for admission usually far exceed capacity, in recent years undergraduate grade-point averages of students admitted have been significantly higher than the 4.0 (A = 5.0) required by the Graduate College. The committee on admissions tends to select those applicants showing a solid undergraduate array of courses, a mastery of a foreign language, and real promise of earning degrees within a reasonable time. Preference is given to applicants who will be full-time students and active degree candidates.

Master of Arts. A candidate for the A.M. in English must spend at least two semesters or the equivalent in residence, and elect at least 8 units of course work distributed among the chronological areas of English and American literature. The student must show a knowledge of one foreign language equivalent to that acquired by three years of undergraduate course work. The student must pass one formal examination, the master's comprehensive examination. A full-time student can complete this program in an academic year.

Doctor of Philosophy. A student wishing to continue beyond the master's must apply formally and is considered in competition with applicants who are taking the master's

elsewhere. Seldom are applicants accepted with graduate averages below 4.5. Students who have taken their Master of Arts degrees elsewhere must pass the master's comprehensive examination during their first year of residence and give evidence of knowledge of one foreign language on a level equivalent to that required of A.M. candidates in our program. The student takes 8 units of course work, planned in consultation with a two-member advising committee. There are no general requirements for further foreign language work, philology-linguistics, or outside minors, although certain fields of specialization do require further work along these lines. There is one formal examination: the special field examination, which is normally taken as the student completes course work and prepares to write the dissertation. The student then goes on to write a dissertation under the direction of a committee composed of three professors. A full-time student can complete this program in three years beyond the master's degree.

Master of Arts in the Teaching of English. A candidate for the M.A.T.E. must spend at least two semesters or the equivalent in residence. Certified teachers may qualify for the degree by completing an approved program consisting of 4 units of English, 1 unit of English methods, 2 additional units in education, and one elective, usually in English. Candidates entering the program without a teaching certificate must complete courses which are specified for certification, including a supervised teaching internship, as well as meeting the other requirements of the degree. Inquiries may be made to the English Education Adviser, 109 English Building.

Financial Aid. Financial aid is available to students in the form of fellowships, teaching assistantships, and waivers of tuition and service fees. Applicants are considered at only one time of the year, and the deadline for submitting applications is February 15. For complete information about the program, prospective applicants should write to the above address for the department's handbook on graduate studies in English.

ENGLISH AS A SECOND LANGUAGE

Acting Director of the Division: Henry Kahane
Correspondence and Information: Director, Division of English as a Second Language, University of Illinois at Urbana-Champaign, 2090 Foreign Languages Building, Urbana, Illinois 61801

FACULTY

Professors: K. Aston, Y. Kachru
Associate Professors: L. Bouton, J. R. Cowan, W. Dickerson
Assistant Professors: L. Bachman, L. Dickerson, R. Dixon, M. Keen, G. Strick, S. Taylor

Graduate Degree Program. The Division of English as a Second Language offers a Master of Arts in the Teaching of English as a Second Language.

Admission. In addition to meeting the Graduate College admissions requirements, applicants should present evidence of appropriate academic preparation in a relevant discipline such as English, linguistics, a foreign language, or a teacher-training curriculum in one of the above or in elementary education. Native speakers of English must have studied at least one foreign language for four semesters or the equivalent, or demonstrate an acceptable proficiency in a foreign language. Nonnative speakers of English must demonstrate an acceptable proficiency in English by attaining a score of at least 550 on the TOEFL examination. The TOEFL examination is required of all applicants to the MATESL curriculum who are not native speakers of English, even when the requirement for that examination has been waived by the University itself.

Master of Arts in the Teaching of English as a Second Language. The program leading to this degree requires a minimum of 8 units, 2 of which must be taken from 400-level courses. Candidates must pass a written comprehensive examination. No thesis or master's paper is required. The curriculum is interdisciplinary and involves work in such areas as descriptive linguistics, language acquisition, the interrelationship of language and culture, language pedagogy, language testing, TESL and bilingual education, and language study. Through the scope and diversity of its courses, the master's program prepares students for both overseas and domestic opportunities. In addition to the on-campus program, the Division of English as a Second Language cooperates with Tehran University and Arya Mehr University of Technology in Isfahan by offering students in the MATESL curriculum an overseas internship in Iran, through which qualified candidates can earn an A.M. degree while gaining experience in the field. Interns complete 2 of the required 8 graduate units of course work on the Urbana campus during an eight-week summer orientation prior to leaving for Iran. Other units can be earned during the overseas training.

The Doctor of Philosophy degree, with a specialization in the Teaching of English as a Second Language, is available both through the College of Education and through the Department of Linguistics. In either of these options, the faculty of the Division of English as a Second Language is available to serve on the various doctoral committees, and English as a Second Language courses help to form the base of the specialization itself. Applicants interested in working toward a doctorate in this area should write to Prof. Terry Denny, Assistant Dean for Graduate Programs, College of Education, or to Prof. Braj Kachru, Head, Department of Linguistics.

Financial Aid. Financial assistance is not normally awarded during a MATESL candidate's first semester. Exceptions to this policy are sometimes made when an applicant has had extensive English as a second language experience, for example in the Peace Corps, or has an exceptional academic record. There is a number of teaching assistantships available to qualified students who have completed their first semester's work.

ENVIRONMENTAL STUDIES

Director of the Institute: Ben B. Ewing
Correspondence and Information: Institute for Environmental Studies, University of Illinois at Urbana-Champaign, 408 South Goodwin Avenue, Urbana, Illinois 61801

FACULTY

Professors: B. B. Ewing, D. M. Gardner, W. P. Lowry, R. L. Metcalf, G. E. Stout
Associate Professors: R. J. Burdge, G. L. Rolfe, W. D. Seitz
Assistant Professors: E. D. Brill, Jr., P. K. Hopke, L. D. Hopkins, J. B. Johnston, G. Provenzano

The Institute for Environmental Studies coordinates and supports programs of research, teaching, and public service in areas related to environmental quality. Although the institute does not offer degree programs, it contributes to graduate education by conducting eleven graduate-level courses on environmental subjects and by providing an opportunity for students working within specific disciplines to participate in interdisciplinary and multidisciplinary research.

The Environmental Toxicology Program coordinated by the institute offers specialized training in the study of toxic substances in the environment. Doctoral candidates and postdoctoral associates with backgrounds in fields such as the life sciences, public health, economics, environmental engineering, or law are eligible to apply for traineeships. In addition to completing a core of course work in environmental toxicology, each trainee conducts research in one of seven areas of concentration, focusing on topics such as the detection and chemical characterization of

toxic substances; the effects of toxicants on organisms and ecosystems; or the legal, social, and economic implications of methods for controlling such substances. Faculty from seven UIUC schools and colleges as well as scientists from the Illinois Natural History Survey direct the research and teaching activities. Doctoral candidates receive their degrees from one of the cooperating graduate units. Financial support for trainees is provided by a grant from the National Institute of Environmental Health Sciences. A brochure describing the program and the requirements for admission and graduation is available from the institute.

The institute's close ties with many other campus units make it possible for students seeking graduate degrees from those units to engage in environmental research within an ongoing institute research program. The forty research projects under way during the 1977-78 academic year have provided research assistantships for more than fifty-five graduate degree candidates on the UIUC campus. Current research programs address a wide range of subjects, including the detection and quantification of trace contaminants, the environmental fate of energy conversion wastes, water resources management, aquatic biology, waste treatment processes, the social and economic impacts of reservoirs, methods for controlling pollutants from agriculture, and environmental planning.

Further information on opportunities for graduate education in environmental studies at UIUC is provided in *Environmental Graduate Programs,* a brochure available from the institute. Also available is a comprehensive listing of environmentally oriented courses currently offered by the institute and by other campus units.

EXTENSION EDUCATION

Graduate Adviser: Violet M. Malone
Correspondence and Information: Extension Education, University of Illinois at Urbana-Champaign, 515 Mumford Hall, Urbana, Illinois 61801

Graduate Degree Program. The Master of Extension Education degree program is a professional program providing advanced study in agriculture and in human resources and family studies, including further study in the social sciences.

Admission. Applicants are expected to possess a bachelor's degree in agriculture, home economics, or a closely related field.

Degree Requirements. The program consists of a minimum of 8 units with a thesis or 9 units without a thesis. Three units must be in 400-level courses with 1 unit in the major field. A major, consisting of 4 units, may be taken in agriculture, human resources and family studies, or the social sciences. Students majoring in agriculture or human resources and family studies select 4 additional units from the social sciences; those majoring in the social sciences select 4 additional units from agriculture or human resources and family studies. All courses selected must be approved by the student's adviser. If a thesis is not submitted, the ninth unit may be selected in any area approved by the adviser. At least 4 units must be earned in residence on the Urbana-Champaign campus.

FINANCE

Chairperson of the Department: William R. Bryan
Correspondence and Information: Department of Finance, University of Illinois at Urbana-Champaign, 340 Commerce Building (West), Urbana, Illinois 61801

FACULTY

Professors: C. T. Arlt, W. R. Bryan, T. E. Cammack, J. A. Gentry, R. W. Mayer (emeritus), R. I. Mehr, R. C. Osborn (emeritus), F. K. Reilly, P. M. Van Arsdell (emeritus)

Associate Professors: K. J. Carey, P. F. Colwell, S. W. Forbes, C. F. Lee, J. W. Leonard (emeritus), C. M. Linke
Assistant Professors: J. E. Gilster, Jr., A. Jahankhani, M. J. Lynge, Jr., C. F. Sirmans, Jr., D. T. Whitford, D. H. Wort, J. K. Zumwalt

Graduate Degree Programs. The Department of Finance offers graduate work leading to the Master of Science and Doctor of Philosophy degrees. The following fields are available for specialization: money, credit, and banking; corporation finance; investment; insurance; and urban economics and real estate.

Admission. In addition to meeting the Graduate College admissions requirements, the applicant is expected to have had at least 27 hours of undergraduate work in social science, 15 hours of which must have been in economics, including a course in principles of economics and other courses for which the course in principles is a prerequisite; credit in the courses in mathematics and statistics required for the bachelor's degree from the College of Commerce and Business Administration at the University of Illinois at Urbana-Champaign, or their equivalent; and sufficient background in the finance area and the related fields of accountancy and business administration to support, in the judgment of the graduate adviser, the candidate's educational objective.

A candidate who elects finance as a minor for either the master's degree or the doctorate must have had at least 12 hours of undergraduate work in social science, 8 hours of which must have been in economics, including a course in principles of economics and other courses for which the course in principles is a prerequisite, and sufficient background in the finance area and in the related fields of accountancy and business administration to support, in the judgment of the graduate adviser, the candidate's educational objective.

Master of Science. A candidate for the master's degree must spend at least two semesters in residence. The credit requirement for this degree is 8 units if the student chooses the thesis option or 10 units if he or she chooses the nonthesis option. Two units of economic theory are required under both options. Two units of quantitative analysis are required under the nonthesis option and 1 unit is required under the thesis option.

Doctor of Philosophy. The doctoral candidate must obtain credit in the second course in calculus, a course in economic statistics, and a course in operations research at the graduate level. The first stage must include 2 units of economic theory, 4 units of finance, and 2 additional units in finance or related fields. The second stage includes 8 units which provide a concentration in finance, understanding of one or more fields in economics in addition to economic theory, and proficiency in any other minor field offered. Further graduate study in the quantitative areas is advised for such candidates. After passing written preliminary examinations in each of the five areas, the candidate must pass an oral preliminary examination which is devoted primarily to the thesis proposal. Following the oral examination, the candidate takes 8 units of independent research and seminars devoted to the dissertation.

FOOD SCIENCE

Head of the Department: Arthur J. Siedler
Correspondence and Information: Director of Graduate Studies, Department of Food Science, University of Illinois at Urbana-Champaign, 567 Bevier Hall, Urbana, Illinois 61801

FACULTY

Professors: B. E. Haskell, F. A. Kummerow, A. I. Nelson, T. Nishida, Z. J. Ordal, E. G. Perkins, A. J. Siedler, M. P. Steinberg, J. Tobias, W. J. Visek, L. S. Wei, R. M. Whitney, L. D. Witter

Associate Professors: C. Argoudelis, P. V. Johnston
Assistant Professors: C. Cheryan, J. W. Erdman, S. E. Martin, J. A. Milner, V. L. Porter

Graduate Degree Programs. The Department of Food Science offers graduate work leading to the Master of Science and Doctor of Philosophy degrees. In addition to receiving training in the general field of food science, students have the opportunity to do research in the following areas of specialization as they relate to food products: chemistry, engineering, microbiology, nutrition, and processing.

Admission. In addition to meeting the Graduate College admissions requirements, a student planning to major in food science should have a baccalaureate degree in a recognized field of biological, physical, agricultural, or engineering science. Background deficiencies may be removed with graduate credit courses designed for this purpose.

Master of Science. To obtain a master's degree, a student must have 2¾ units in food science. The remainder of the 8 units of credit required consists of graduate courses selected from inside or outside the department which are appropriate for the training and development of the student in the field of specialization. A thesis may be required at the option of the candidate and adviser. An oral examination covering the field of food science and the area of the candidate's specialization is also required.

Doctor of Philosophy. In addition to the courses required for the master's degree, candidates for the Doctor of Philosophy must have additional credit in seminar (¼ unit) and thesis research (8 units). The remainder of the 16 units required for the degree consists of graduate courses selected from inside or outside the department which are appropriate for training in the student's field of specialization. In addition, the candidate must demonstrate proficiency in one foreign language, as approved by the adviser, in which adequate scientific literature exists. Also, the student must complete a special option approved by the adviser which may be counted as part of the 16 required units of credit. Upon completion of all formal courses, language, and special option requirements, or during the last semester of course work, the student is required to take an oral preliminary examination. The final 8 units after passage of the preliminary examination are devoted to research. Upon submission of the dissertation, the candidate is admitted to the final oral examination before a faculty committee. Students specializing in nutrition may elect to receive their degree in nutritional sciences by satisfying the specific requirements of that program (see page 132). Although teaching is not a general Graduate College requirement, this department requires Ph.D. candidates to do some teaching as part of their academic work, such experience being considered a vital part of the graduate program.

FORESTRY

Head of the Department: I. I. Holland
Correspondence and Information: Department of Forestry, University of Illinois at Urbana-Champaign, 57 Mumford Hall, Urbana, Illinois 61801

FACULTY

Professors: F. A. Bazzaz, A. R. Gilmore, I. I. Holland, D. E. Koeppe, C. S. Walters
Associate Professors: P. Chow, J. K. Guiher, J. J. Jokela, G. L. Rolfe
Assistant Professors: J. F. Dwyer, D. R. Pelz

Graduate Degree Program. The Department of Forestry offers graduate work leading to the Master of Science degree. The Doctor of Philosophy degree is not offered by the department, but qualified students may work toward this degree

with a forestry adviser who holds a joint appointment in another department, or is on the staff of an interdisciplinary doctoral program. Such areas of study include economics, environmental biology, genetics, plant physiology, and soils.

Admission. The prerequisite for graduate study in the Department of Forestry is a bachelor's degree in forestry or a related field. Some exceptions to this prerequisite are permitted on an individual basis.

Master of Science. To qualify for the Master of Science degree, a student must earn at least 8 units of graduate credit with at least 3 units in courses at the 400 level. At least half of these units must be from courses meeting on the Urbana-Champaign campus or from courses approved by the Graduate College for residence credit although meeting at other locations. Depending on their backgrounds, nonforestry graduates may be required to complete certain basic forestry courses in addition to the regular degree requirements. Programs are designed to serve the needs of each student in such areas as land use, ecology, economics, genetics, physiology, soils, statistics, biometrics, and wood science.

In most cases a thesis is required, but it may be waived if such waiver will result in a better program for the individual student. The forestry seminar is required of all graduate students. There are no language or qualifying examination requirements.

Financial Aid. Besides University and other fellowships for which graduate students may compete, the Department of Forestry offers a number of graduate research assistantships ranging from 25 percent through 67 percent time. Assistants are exempt from tuition and the service fee but not from the hospital-medical-surgical fee.

Research Interests. Major areas of faculty research interest include water quality and watershed management, biomass production on Illinois forested bottomlands, forest and water-based recreation valuation, recreational impacts on institutions and forest vegetation, management of forest vegetation in stressed urban settings, utilization of wood residues, and forest tree improvement through selection and breeding.

FRENCH

Head of the Department: Paul Gaeng
Coordinator of Graduate Studies: Emile Talbot
Correspondence and Information: Department of French, 2090 Foreign Languages Building, University of Illinois at Urbana-Champaign, Urbana, Illinois 61801

FACULTY

Professors: A. O. Aldridge, B. C. Bowen, H. De Ley, P. Gaeng, P. Haidu, E. Jahiel, F. Jost, B. Mainous, F. Marty, F. W. Nachtmann, R. J. Nelson, Y. Velan
Associate Professors: V. Bowen, S. Gray, F. Jenkins, M. K. Myers, L. B. Price, S. Savignon, E. Talbot, P. Weisz
Assistant Professors: E. Accad, D. Birckbichler, A. Kotin, G. Savignon, S. Shinall, J. Wirth

Graduate Degree Programs. The Department of French offers graduate courses leading to the Master of Arts, the Master of Arts in the Teaching of French, and the Doctor of Philosophy. Candidates for the A.M. degree may specialize in literature or in expanded French studies. Candidates for the Ph.D. may choose one of three specializations: literature, expanded French studies, or second-language learning and teaching.

Admission. Students are normally considered for admission to the A.M. program who have an overall undergraduate admission average of 4.0 (A = 5.0) with an average in French of 4.5. Students should normally have had a college major in French. Entering students are given a diagnostic test to determine whether remedial study in French language courses is necessary. Some knowledge of other Romance languages and

literatures is desirable. Students seeking admission to the Ph.D. with a Master of Arts degree earned elsewhere are expected to have a 4.5 grade-point average in graduate courses. Their master's degree should be in French literature or in French studies. Candidates seeking admission to the Ph.D. concentration in second-language learning and teaching may hold an M.A.T. degree.

Master of Arts. In addition to fulfilling the general requirements of the Graduate College, candidates must take an A.M. examination based on a reading list covering the field of French literature. The examination in expanded French studies covers, in addition to readings in the field of French literature, material bearing on the candidate's field of specialization in French culture or related disciplines. Candidates in all programs are required to demonstrate, at the time of the master's examination, an ability to communicate effectively in both written and oral French. A course in research methods and textual analysis is also required for the A.M. degree.

Master of Arts in the Teaching of French. An applicant for admission is normally expected to have a bachelor's degree in French teacher education. Candidates for this degree must complete a total of 8 units as follows: 4 units in French civilization, language, and/or literature (excluding French 311, 313, 314), at least 2 of which must be at the 400 level; 1 unit in educational psychology; 1 unit in educational policy studies; and 2 units of electives, one of which must be taken in French. Remedial work in French diction and syntax may also be required of candidates who show deficiencies in these areas. In addition to completion of course work, candidates will be required to pass a comprehensive written and oral examination during their last semester of study, demonstrating a satisfactory level of communicative competence in French and the ability to integrate effectively their knowledge of French language, literature, and culture in developing a philosophy and practice of teaching.

Candidates who do not have teacher certification must complete the undergraduate program in the teaching of French or its equivalent, in addition to the requirements for the M.A.T. program described above.

Doctor of Philosophy. Candidates in all programs must complete a minimum of 8 units of course work beyond the A.M., and must pass a preliminary examination and write an acceptable dissertation. Although teaching is not a general Graduate College requirement, the Department of French requires Ph.D. candidates to do some teaching as part of their academic work, such experience being considered a vital part of the graduate program for students planning a career in teaching.

Ph.D. in Literature. This program is designed to prepare literary scholars and teachers. The program is flexible enough, however, to permit students with the proper background to specialize in linguistics or second-language acquisition. Candidates are required to include courses in research methods and textual criticism, the history of the French language, and French literature. Reading proficiency in one language other than French or English is required, as well as one year of college Latin or the equivalent.

Ph.D. in Expanded French Studies. The doctoral program in expanded French studies allows for research in francophone literature or in the relation of French literature to some nonliterary discipline. Two of the required 8 units of course work beyond the A.M. may be taken in other departments or programs when available and approved by the graduate adviser. Candidates are required to include courses in research methods and textual criticism and in French literature. Reading proficiency in one language other than French or English is required, as well as one year of college Latin or the equivalent.

Ph.D. in Second-Language Learning/Teaching. An interdisciplinary concentration in second-language learning/teaching is available to candidates with an A.M. or M.A.T. degree in French and at least one year of experience in teaching French as a second language. Candidates selecting this option are required to complete courses in psycholinguistics, education, and language teaching methodology, in addition to advanced study in French language and culture. Also required are 4 units in research methodology selected from one of several options including linguistics, psychology, computer science, or statistics.

Financial Aid. Assistantships and University Fellowships are awarded. Six graduate students each year spend the school year in France under a graduate exchange agreement with the French government. The department has also initiated an exchange program with the University of Dakar, Senegal.

GENERAL ENGINEERING

Head of the Department: J. S. Dobrovolny
Correspondence and Information: T. F. Conry, Department of General Engineering, University of Illinois at Urbana-Champaign, 117 Transportation Building, Urbana, Illinois 61801

FACULTY

Professors: J. S. Dobrovolny, H. W. Knoebel
Associate Professors: T. F. Conry, L. D. Metz, M. H. Pleck, H. Streeter, L. Wozniak
Assistant Professors: W. W. Chow, W. J. Davis, R. D. Hugelman, S. Ramamurthy, J. Rastegar

Graduate Degree Program. The Department of General Engineering offers graduate study leading to the degree of Master of Science. The program consists of a core of required courses including legal problems in engineering design, coordination of engineering design projects, and a design thesis or project. In addition, the student undertakes study in a disciplinary area outside the department.

The master's degree program in general engineering is intended for students interested in engineering project planning and execution, stressing the design function for manufacturing. The program thus offers an approach to engineering that crosses disciplinary lines. Graduates of the program are prepared to enter professional engineering positions in industry, government, and private practice. Students whose career objectives include obtaining the Ph.D. should not enter this program.

Admission. Applicants who have completed degree requirements in an accredited engineering program or its equivalent are eligible to apply for admission. Qualifications for admission include a grade-point average of 4.0 (A = 5.0) for the last 60 hours of undergraduate work.

Master of Science. Each candidate must successfully complete a minimum of 2 units of project design (General Engineering 497) or one unit of thesis research (General Engineering 499). Each candidate must also successfully complete at least 7 units of graduate course work, of which at least 3 units must be at the 400 level.

Financial Aid. Qualified students may apply for financial aid in the form of teaching and research assistantships and waivers of tuition and service fees.

Research Interests. The research interests of the faculty include design optimization, fluidics, biomechanics, systems dynamics and simulation, human factors in design, multilevel systems theory, and computer graphics in design.

GENETICS

Correspondence and Information: E. H. Brown, Chairperson, Genetics Program Committee, University of Illinois at Urbana-Champaign, 515 Morrill Hall, Urbana, Illinois 61801

Graduate Degree Program. A Doctor of Philosophy in Genetics program is provided through the cooperative efforts of a number of departments and is administered by the

Genetics Program Committee. Training is available in molecular, microbial, developmental, population, quantitative applied plant and animal, and behavioral and human genetics, and in cytogenetics and evolution. Experience is provided with a variety of organisms ranging from viruses to vertebrates. Students seeking masters' degrees are directed to the various departmental programs, or to the master's program in biology offered by the School of Life Sciences.

Admission. Applicants will be evaluated on the basis of their educational background, grade-point average (which must be at least 4.0 = B), Graduate Record Examination scores (verbal, quantitative, and advanced biology), and letters of recommendation. Applicants should have completed courses in quantitative and organic chemistry, trigonometry, analytical geometry, and one year of college physics. Biochemistry and calculus are strongly recommended.

Doctor of Philosophy. During the first year, each student determines a program of study in consultation with an adviser and the Genetics Program Committee. During the first two years, students obtain a broad background in the major disciplines of genetics (molecular and microbial, population or quantitative, and cytogenetics) and complete courses or demonstrate proficiency in biochemistry, calculus, and statistics. Thesis research may be carried out under the direction of any of the many staff members engaged in genetics research throughout the University of Illinois at Urbana-Champaign.

GEOGRAPHY

Head of the Department: A. Getis
Correspondence and Information: Director of Graduate Admissions, Department of Geography, University of Illinois at Urbana-Champaign, 220 Davenport Hall, Urbana, Illinois 61801

FACULTY

Professors: C. S. Alexander, S. A. Changnon, Jr., J. D. Fellmann, A. Getis, W. P. Lowry, H. G. Roepke, D. B. Shimkin, J. Thompson
Associate Professors: G. J. D. Hewings, J. A. Jakle, D. L. Johnson, C. C. Roseman, W. M. Wendland
Assistant Professors: N. A. Brown, J. R. Eyton, J. J. Monk, J. V. O'Loughlin, D. L. Williams

Graduate Degree Programs. The Department of Geography offers work leading to the Master of Arts, Master of Science, and Doctor of Philosophy degrees. A program for prospective teachers, the Master of Science in the Teaching of Geography, is also available. At the master's level, the program emphasizes broad understanding of the main systematic areas of the discipline, acquisition of basic research competencies, and proficiency in specialties of the student's choice. Programs for doctoral candidates lead students into innovative research through in-depth study in an area of specialization, further study in research techniques, and work in allied disciplines. Detailed descriptions of the programs may be obtained from the departmental office.

Admission. Students applying for admission to the master's programs are expected to have a strong undergraduate background in geography and/or related disciplines. In addition to the Graduate College admissions requirements, a grade-point average of at least 4.0 (A = 5.0) in the undergraduate major is required. Ph.D. candidates are generally expected to have at least a 4.5 average in previous graduate work.

Master of Arts and Master of Science. Successful candidates for the master's degree whose backgrounds are largely in physical geography are recommended for the Master of Science; others receive the Master of Arts. At least 4 of the minimum of 8 units of graduate credit required for the master's degree, including research courses, must be in geography.

Master of Science in the Teaching of Geography. Candidates for this degree must earn 4 units in geography, 2 of which are geography electives, 2 units in education, and 2 units in electives. Specific degree requirements may be obtained from the degree adviser, Professor J. J. Monk.

Doctor of Philosophy. Admission presupposes distinction in completing the University of Illinois master's program in geography or its equivalent. In the doctoral program, the student develops depth in areas chosen for specialization and further advances in research competence. Of the 16 units required beyond the master's degree, 4 units of study in allied disciplines and a minimum of 6 additional units in geography are required. A student must complete the course requirements as determined by an individually planned program, initiate and complete research projects, and qualify for candidacy by passing the preliminary examination. Although there is no departmental foreign language requirement, students may offer a foreign language as a research technique.

GEOLOGY

(Including Earth Science)

Acting Head of the Department: PHILIP A. SANDBERG
Educational Coordinator: DONALD M. HENDERSON
Correspondence and Information: Educational Coordinator, Department of Geology, University of Illinois at Urbana-Champaign, 254 Natural History Building, Urbana, Illinois 61801

FACULTY

Professors: A. V. CAROZZI, P. A. DOMENICO, F. A. DONATH, D. L. GRAF, D. M. HENDERSON, G. DEV. KLEIN, R. L. LANGENHEIM, JR., P. A. SANDBERG, D. S. WOOD
Associate Professors: D. E. ANDERSON, T. F. ANDERSON, D. B. BLAKE, J. T. HOLDER, W. H. JOHNSON, C. J. MANN, V. V. PALCIAUSKAS
Assistant Professors: D. D. EBERL, A. S. NIETO

Graduate Degree Programs. The Department of Geology offers programs leading to the Master of Science and Doctor of Philosophy in Geology and the Master of Science in the Teaching of Earth Science. Programs in carbonate geology, clay mineralogy, engineering geology and rock mechanics, environmental geology, geochemistry, geophysics, geomorphology and quaternary geology, hydrogeology, marine geology, mathematical geology, mineral deposits, mineralogy and petrology, paleontology and stratigraphy, sedimentology and sedimentary petrography, structural geology, and transport processes give students a wide choice of courses and areas of specialization.

Admission. The admissions requirements of the Graduate College apply. Geology majors with basic courses in biology, calculus, chemistry, and physics are given preference, but students from cognate fields are encouraged to apply. An individual program of study will be outlined to provide the essential background to meet the needs of a student with a deficiency in geology or in an allied science.

Some part-time assistants are employed by the State Geological Survey, which is located on campus.

Master of Science. The M.S. requires a minimum of 8 units of credit, of which 2 units are normally research credit for a satisfactory master's thesis. Students continuing on for the Ph.D. degree may petition to bypass the writing of a master's thesis and upon passing the preliminary examination, may petition to receive the M.S. degree. In exceptional circumstances, terminating students may petition to obtain the M.S. degree without completing a thesis. At least 3 units of course work must be taken within the department, and at least 3 units must be completed at the 400 level. The program is normally completed in one to two years.

Master of Science in the Teaching of Earth Science. Candidates must earn 8 units, including 4 units in geology, 2 units in other earth science areas, and 2 units in education (see page 84). At least 3 units must be at the 400 level. In addition, candidates must fulfill the requirements to be certified to teach at the secondary school level in Illinois.

Doctor of Philosophy. The Ph.D. requires an additional 8 units of course work beyond the requirements for the master's degree, and the completion of a satisfactory dissertation, including 8 units of research and seminar. At least 4 of the course units must be taken within the department and at least 3 units must be at the 400 level. A reading knowledge of French, German, or Russian is required. There are three formal examinations: the reading, the preliminary, and the final examinations. There are three faculty committee assessments of student academic ability and progress: the entrance evaluation and the preliminary and final examinations. The entrance evaluation surveys the student's background and preparation and in part is used for planning individual programs; the second is focused on the student's proposed research for the dissertation and tests the student's preparedness for the proposed research; and the third evaluates the student's research ability as demonstrated by the completed dissertation. The doctoral program is normally completed in two to four years beyond the master's degree.

GERMANIC LANGUAGES AND LITERATURES

Head of the Department and Graduate Adviser: Elmer H. Antonsen
Correspondence and Information: Head, Department of Germanic Languages and Literatures, 2090 Foreign Languages Building, University of Illinois at Urbana-Champaign, Urbana, Illinois 61801

FACULTY

Professors: E. H. Antonsen, H. G. Haile, W. Höllerer, H. Knust, R. Lorbe, J. W. Marchand, P. M. Mitchell, I. Rauch
Associate Professors: M. Burkhard, U. H. Gerlach, J. M. McGlathery, R. Schier, K.-H. Schoeps
Assistant Professors: P. Grundlehner, K. Phillips, P. Schwalbe, R. Wright

Graduate Degree Programs. The Department of Germanic Languages and Literatures offers graduate programs leading to the degrees of Master of Arts, Master of Arts in the Teaching of German, and Doctor of Philosophy.

Master of Arts. Applicants should have completed a four-year course of undergraduate study in German comparable to that of the University of Illinois, with a grade-point average of 4.0 (A = 5.0) for the last 60 hours of undergraduate course work plus any graduate work completed, be familiar with the principal works of German literature, and be able to follow lectures in the German language. Acquaintance with German history and culture in their relation to the general European background is desirable. Admission to the program is on a competitive basis.

Candidates for the Master of Arts in German may emphasize either literature or linguistics in their course of study, but all candidates must take course work in both areas.

Eight units of graduate work are required, although deficiencies in undergraduate preparation may necessitate more than 8 units to meet the requirements. Residence requirements of the Graduate College must be met. Candidates for the A.M. must demonstrate proficiency in reading one language other than English and German (normally French). Full-time students with good undergraduate training can normally complete the degree in one academic year. Required courses (or approved equivalents) are: German 365 and 366 (Structure of the German Language

I, II), German 311 and 312 (German Literature 750-1770), German 415 (Middle High German), German 420 (History of the German Language), German 410 (Introduction to Graduate Study), and two graduate literature courses beyond the survey level. Electives may be chosen from within or from outside the department with the approval of the graduate adviser. The degree is awarded upon the successful completion of a three-hour written and a one-hour oral comprehensive examination, or upon successful defense of a thesis. More detailed information may be obtained from the departmental office.

Master of Arts in the Teaching of German. Applicants must meet the same admission standards as those for the Master of Arts in German. Candidates for the M.A.T. must earn 4 units in approved graduate courses in German, 2 units in approved courses in educational policy studies, and 2 units of electives. Candidates must also complete all undergraduate requirements for a teaching certificate, although no graduate credit is given for undergraduate courses. In some cases, with proper advance approval, graduate courses may be applied to the teaching certification requirements. Residence requirements are those of the Graduate College. The degree is awarded after the successful completion of a three-hour written and one-hour oral examination. Full-time students with adequate undergraduate preparation complete the degree in one academic year. More detailed information is available from the departmental office.

Doctor of Philosophy. Applicants must meet the admission standards outlined for the Master of Arts and, in addition, hold a Master of Arts in German (or equivalent) with a graduate grade-point average of 4.5 (A = 5.0) with a recommendation that the student pursue additional graduate study in the field.

Candidates for the Ph.D. in German may specialize in older German literature, modern German literature, or Germanic linguistics.

Students working towards the Ph.D. degree must have completed all requirements for the A.M. degree given above and complete an additional 8 units of course work approved by the graduate adviser. Residence requirements are those of the Graduate College. Candidates must demonstrate proficiency in reading two languages other than English and German, one of which is normally French. Students in Germanic linguistics may substitute Russian for French, with the second language Scandinavian. After passing the written preliminary examinations (three three-hour comprehensive examinations), the student is admitted to the oral examination, the successful completion of which admits the student to candidacy for the Ph.D. degree. The candidate must then complete 8 units of thesis research and successfully defend the thesis in an oral examination. All candidates for the Ph.D. degree must have taught the equivalent of three one-semester courses on the college level (i.e., one-half-time teaching for one academic year) before being admitted to the final oral examination (thesis defense). Full-time students can complete this program in two years beyond the master's. More detailed information is available from the departmental office.

Financial Aid. Financial aid of all types is contingent upon the maintenance of satisfactory progress toward a degree. Teaching assistantships are awarded on a competitive basis to promising candidates with a strong academic record. Preference may be shown for students who have lived in a German-speaking country and who have had some teaching experience.

Teaching assistantships are normally awarded for one-half time for the academic year. Each year the department may nominate one or two outstanding students for a University Fellowship. A limited number of tuition and service fee waivers may also be available. Full details on amounts of financial aid and time limitations for eligibility may be obtained from the departmental office.

Research Interests. The department faculty includes nationally and internationally recognized authorities in all areas of research within the field, including older and modern German literature, medieval studies, Scandinavian literature, German film, computerized instruction, and historical and synchronic Germanic linguistics. The University Library has one of the nation's outstanding collections of works pertaining to study and research in German literature of all periods, and of linguistics in general and Germanic linguistics in particular.

GOVERNMENT AND PUBLIC AFFAIRS

Director of the Institute: S. K. Gove
Correspondence and Information: Institute of Government and Public Affairs, University of Illinois at Urbana-Champaign, 1201 West Nevada Street, Urbana, Illinois 61801

FACULTY

Professor: S. K. Gove
Assistant Professors: P. N. Nardulli, H. T. Sanders

The Institute of Government and Public Affairs conducts policy-oriented research and public service. The focus of the research is on important areas of state and local government structure and process with emphasis on the problems of urbanization. Public service activities arise from and contribute to the research thrust through contact with public officials and the identification of research problems. The institute offers no courses, but its faculty members teach in various departments, guide student research, and direct intern programs. Results of institute research are published in internal and external journals and books.

HEALTH AND SAFETY EDUCATION

Head of the Department: William H. Creswell, Jr.
Correspondence and Information: Department of Health and Safety Education, University of Illinois at Urbana-Champaign, 121 Huff Gymnasium, 1200 South Fourth Street, Champaign, Illinois 61820

FACULTY

Professors: K. S. Clarke, W. H. Creswell, Jr., R. G. Mortimer, D. B. Stone
Associate Professors: L. B. O'Reilly, T. W. O'Rourke
Assistant Professors: P. B. Imrey, L. G. Rubinson, W. L. Warner

Graduate Degree Programs. The Department of Health and Safety Education offers programs of study leading to the Master of Science and Doctor of Philosophy degrees. At the master's level the program offers options in school health, safety, and community health education. The Ph.D. program is designed to prepare graduates for positions of leadership in teaching, research, and service in colleges, universities, and health-related agencies in the United States and in other countries. Opportunities are available for graduate students who desire to concentrate in additional public health areas through an intercampus program with the School of Public Health, University of Illinois at the Medical Center.

Master of Science. Students without the equivalent of an undergraduate health education major may be permitted to register for graduate courses but will be required to make up deficiencies in their undergraduate preparation as deemed necessary by their adviser. The minimum standard for admission to the master's degree program is an undergraduate grade-point average of 4.0 (A = 5.0) or higher. The grade-point average is computed for the candidate's last 60 semester hours of undergraduate courses (excluding student teaching, field work, and activity courses).

The program of study for the Master of Science (school health option) is normally completed in one year of full-time study. Eight units of work are required, including the following: 6 units in health education, 1 unit of which may be in approved courses closely related to health education, and presentation of an acceptable thesis in health education (2 units). Candidates may petition to waive the thesis but will be required to take 2 units in lieu of thesis credit. Students who elect to write a thesis must take an additional unit of course work in educational statistics if they did not complete a course of a similar nature in their undergraduate study.

The duration of study in the community health option is generally from one to one and one-half years depending upon prior education and experience. Eight units of work are required, including 4 units in the core courses which are intended to provide the student with an overall knowledge of the public health field and the tools necessary for successful functioning as a community health education specialist; 2 units of community health–related electives; and 2 units of field work experience in the summer.

Financial Aid. A limited number of quarter-time teaching assistantships is available for qualified students.

Doctor of Philosophy. The admission requirements of the Ph.D. program include the following; an acceptable grade-point average in undergraduate work and an average of 4.5 for graduate work, and acceptable score on the Miller Analogies Test and on the aptitude section of the Graduate Record Examination, and three letters of recommendation. Candidates are required to have a personal interview with the department head or a representative of the department. Preference is given to students who have had at least two years of professional experience.

A master's thesis or equivalent is required for applicants for Ph.D. study. Candidates for the Ph.D. degree must complete a minimum of 25 units of credit including the following: a minimum of 9 units in the major or related fields; one minor for a minimum of 4 units, or two minors for a minimum of 2 units each (in both cases outside the major and related fields); ability to translate accurately two foreign languages, or ability to read, write, and converse satisfactorily in one foreign language (2 additional approved graduate course units may be substituted for each of the two foreign languages); a seminar in the major field; and completion of an acceptable dissertation (8 units). All candidates must take 2 units of graduate course work to fulfill the research requirements: Educational Psychology 390 and 496 or their equivalents.

The candidate is required to pass written preliminary examinations covering human ecology and epidemiology, school-college health education, community health education, safety education, research, and a selected area of specialization; to present an oral defense of the dissertation proposal; and to pass an oral final examination covering the research.

Financial Aid. A limited number of quarter-time and half-time teaching and research assistantships is available for qualified students.

HISTORY

Chairperson of the Department: Walter L. Arnstein
Director of Graduate Studies: Clark C. Spence
Correspondence and Information: Department of History, University of Illinois at Urbana-Champaign, 308 Gregory Hall, Urbana, Illinois 61801

FACULTY

Professors: W. L. Arnstein, J. L. Bates, P. P. Bernard, R. B. Crawford, C. E. Dawn, L. E. Eastman, W. D. Farnham, R. T. Fisher Jr., B. D. Hill, K. A. Hitchins, F. C. Jaher, R. W. Johannsen, B. L. Kling, R. M. McColley, J. P. McKay, J. A. Nichols, D. E. Queller, P. W. Schroeder, W. U. Solberg, C. C. Spence, R. M. Sutton
Associate Professors: N. M. Belting, R. W. Burkhardt, J. R. Dahl, P. W. Drake, T. A. Krueger, J. L. Love, V. Mastny, R. E. Mitchell, D. L. Ransel, C. C. Stewart, R. C. Trexler, B. P. Uroff, R. W. Waller, H. J. Wechsler
Assistant Professors: J. Buckler, O. V. Burton, C. M. Hibbard, R. C. Jennings, E. M. Melhado, J. H. Pruett, W. Widenor

Graduate Degree Programs. The Department of History offers graduate courses leading to the Master of Arts and the Doctor of Philosophy, complete details of which

may be found in the department's brochure on graduate study in history. The Master of Arts degree may be either the first stage in preparation for the degree of Doctor of Philosophy or a terminal degree. A special program for teacher training is available, the Master of Arts in the Teaching of Social Studies (see page 145).

Approved areas of specialization are: ancient Greece; ancient Rome; medieval Europe to 1300; Europe, 1300-1648; Europe, 1648-1815; Europe since 1815; Russia; Eastern or Southeastern Europe; England to 1688; England and the Empire-Commonwealth since 1688; Near East and Middle East; Africa; China; Japan; South Asia; early America to 1830; United States since 1815; Latin America; history and philosophy of science; and history of international relations since 1871. Topical fields may also be arranged with the consent of the graduate advisers.

Admission. For the A.M. program: An average of 4.0 (A = 5.0) during the last two years of undergraduate work; a reasonable amount of course work in history; Graduate Record Examination scores (verbal and quantitative mandatory; history optional). For the Ph.D. program: An average of 4.5 (A = 5.0) for previous graduate-level work; Graduate Record Examination scores (as above). Undergraduate language preparation, especially in French, German, or Russian, is important; for ancient, medieval, and Renaissance history, some knowledge of Greek or Latin is essential; Spanish is required for certain fields of European and Latin American history.

Master of Arts. Candidates are expected to take at least 2 units in each of two of the fields of specialization listed above. A minimum of 8 units is required, 4 of which must be at the 400 level, but excluding 496, 498, or 499. At least one research seminar with a grade of B or better must be included. Students may elect to write a master's thesis, but the thesis does not replace the seminar requirement and may carry no more than 3 units of credit. A candidate must demonstrate ability to read one foreign language related to his or her field of interest as approved by the graduate advisers.

Doctor of Philosophy. A candidate for the Ph.D. needs a minimum of 16 units beyond the master's degree. Eight of these units may be thesis research credit, but three 400-level research seminars are normally required, if not taken in the master's program here. Students should take a total of at least seven courses at the 400 level, not including the history of historiography (496), problems in the teaching of college history (498), and thesis research credit (499), which are also required. A candidate must demonstrate ability to read two foreign languages related to his or her field of interest as approved by the graduate advisers. In certain circumstances, a student may substitute courses in quantification skills for the second language. For the preliminary examination, the candidate must offer at least three fields in history, to be chosen from the specializations listed above, with no more than two in the same geographic area and at least one in a period prior to 1815. A student offering more than three fields may offer as a major or minor field an approved topical specialization such as European economic history, American intellectual history, or English constitutional history. Of the total 16 (or more) units, a minimum of 12 must be taken in history.

Concentration in the Area of American Civilization. The Department of History administers an interdisciplinary doctoral program in American civilization. Students are required to take, among their 16 units prior to preliminary examinations, at least 4 units in American history, 3 in literary studies, 2 in the fine arts, and 2 in the behavioral sciences. Course work may be arranged to allow specialization in such interdisciplinary fields as popular culture, urban studies, regional studies, folklore, film, and minority cultures. Students apply for admission and financial aid through the Department of History.

Concentration in the Area of History and Philosophy of Science. The Departments of History and Philosophy jointly offer, for work toward the A.M. and the Ph.D. degrees, a special area of concentration in history and philosophy of science. Students interested in this program will enroll in, and receive their degrees from, either

the history or the philosophy department, depending on the focus of their interests. Undergraduate background requirements for admission to the program are flexible; although an undergraduate concentration in either history or philosophy is normally desirable, so also is a strong background in science, and students with such backgrounds, but only weak training in history or philosophy, will be considered for admission. The admission procedure is the same as that stated for each of the two departments, as is the information to be submitted with each application for admission. For students in this special concentration, the normal departmental requirements for the A.M. and Ph.D. degrees are modified. Further information is available from the Department of History.

Financial Aid. Financial aid is almost always awarded on an academic-year basis. Applications are due in the department office by February 15. All fellowships and assistantships involve a stipend plus tuition and service fee waiver.

Fellowships. Available fellowships include University Fellowships for entering A.M.-level and Ph.D.-level students at the dissertation writing stage, Babcock Fellowships for dissertation-level students, Foreign Language and Area Studies (NDEA VI) Fellowships for those who have special interests in foreign area studies, and Graduate College fellowships for beginning students who have disadvantaged backgrounds.

Teaching Assistantships. Half-time teaching assistantships are the department's primary form of financial aid to graduate students admitted to the Ph.D. program. Students who make satisfactory progress toward their degree and demonstrate effective teaching will have their teaching assistantships renewed for a second and, in some cases, for a third year.

Tuition and Fee Waivers. A number of tuition and service fee waivers is available each year both to entering and continuing students at the A.M. and Ph.D. level.

HISTORY AND PHILOSOPHY OF SCIENCE

Graduate Program. An interdisciplinary concentration in the history and philosophy of science is available leading to the Master of Arts or Doctor of Philosophy degree. Students for this program enroll in either the Department of History or the Department of Philosophy. Further information may be obtained from those departments or the School of Humanities.

HORTICULTURE

Head of the Department: W. L. George
Correspondence and Information: Department of Horticulture, University of Illinois at Urbana-Champaign, 57 Mumford Hall, Urbana, Illinois 61801

FACULTY

Professors: C. Y. Arnold, M. C. Carbonneau, J. W. Courter, J. R. Culbert, D. F. Dayton, D. B. Dickinson, J. B. Gartner, W. L. George, H. J. Hopen, E. R. Jaycox, W. R. Nelson, C. A. Rebeiz, R. K. Simons, W. E. Splittstoesser, J. S. Titus, J. S. Vandemark
Associate Professors: M. A. Dirr, F. A. Giles, M. M. Meyer, A. M. Rhodes, L. A. Spomer, A. J. Turgeon
Assistant Professors: R. M. Skirvin, J. R. Street, D. J. Williams

Graduate Degree Programs. Graduate work is offered in the Department of Horticulture leading to the Master of Science and Doctor of Philosophy degrees. Students may specialize in any phase of horticulture (fruit and vegetable crops, ornamentals, and turf), including breeding and genetics, culture and production, weeds and their

control, environmental physiology, biochemistry, developmental anatomy and morphology, tissue culture, marketing, or apiculture. A well-balanced program may include courses in agronomy (crops and soils), botany, food science, genetics, statistics, entomology, plant pathology, chemistry, biochemistry, agricultural economics, and agricultural communications.

Admission. Applicants should have a bachelor's degree in horticulture or equivalent preparation in the plant sciences and must meet the Graduate College requirements for admission.

Master of Science. A candidate must complete a minimum of 8 units of graduate study with a grade-point average of at least 4.0 (A = 5.0); at least 3 units must be in the 400 series of courses. Thesis and nonthesis options are available; however, the thesis option is preferred and is required of all research assistants. Any request for the nonthesis option is considered on its individual merit by the graduate committee of the department.

Doctor of Philosophy. The candidate must complete a minimum of 8 units of course work beyond the master's degree and pass a preliminary examination. The candidate must also complete 8 units of thesis research, submit an acceptable thesis, and defend it in an oral examination. Competence in a foreign language may be required, depending on the area of specialization and recommendations of the student's advisory committee. Additional details of departmental graduate degree requirements are described in a pamphlet available from the Department of Horticulture.

Financial Aid. Various support monies available on a competitive basis include University Fellowships, College of Agriculture Fellowships, research assistantships, and waivers of tuition and service fees.

HUMANITIES

Director of the School of Humanities: Nina Baym
Correspondence and Information: School of Humanities, University of Illinois at Urbana-Champaign, 112 English Building, Urbana, Illinois 61801

The School of Humanities, one of four schools in the College of Liberal Arts and Sciences, is the association of twelve departments and programs in the humanities; it also maintains cooperative relationships with allied departments in other colleges. The school includes the Departments of the Classics; English; French; Germanic Languages and Literatures; History; Linguistics; Philosophy; Slavic Languages and Literatures; Spanish, Italian, and Portuguese; and Speech Communication; and the Programs in Comparative Literature and Religious Studies. The master's and doctoral degree programs offered in the graduate units in the School of Humanities are described in individual entries in this catalog for each field of study.

The various departments and programs include almost 300 faculty and approximately 500 graduate teaching and research assistants. The School of Humanities' primary responsibility is to promote humanistic teaching, research, and public service both in the traditional disciplines and in interdisciplinary fields. In addition to traditional fields of study, the school also offers various special and interdisciplinary subjects including cinema studies, American civilization, medieval civilization, and Renaissance studies. Graduate programs leading to the master's and doctoral degrees are available in American civilization and the history and philosophy of science; these programs and the work of individual degree candidates are supervised by interdisciplinary advisory committees.

HUMAN RESOURCES AND FAMILY STUDIES

Director of School: PAULINE C. PAUL

Correspondence and Information: School of Human Resources and Family Studies, University of Illinois at Urbana-Champaign, **274** Bevier Hall, Urbana, Illinois 61801

FACULTY

Professors: M. M. DUNSING, B. E. HASKELL, Q. B. MILLS, P. C. PAUL, R. B. SMITH, F. O. VAN DUYNE

Associate Professors: H. H. ALEXANDER, K. A. ANSPACH, V. GUTHRIE, J. L. HAFSTROM

Assistant Professors: J. H. ANDERSON, L. L. BIRCH, N. J. FISHER, L. A. GOSSELIN, J. HUNTER-HOLMES, R. P. JOHNSON, B. P. KLEIN, F. M. LAFONT, D. K. LAYMAN, B. J. PETERSON, M. F. PICCIANO, S. B. SALAMON

Graduate Degree Programs. The School of Human Resources and Family Studies offers graduate work leading to the Master of Science, Master of Arts, and Doctor of Philosophy degrees. Master's degree programs are available in family and consumption economics, foods and nutrition, general human resources and family studies, human development and family ecology, and textiles and clothing. Doctoral degrees are offered in family and consumption economics and in foods and nutrition. Requirements for these are listed under the individual programs.

For the master's degree in human resources and family studies (HRFS), all candidates must complete a minimum of 8 units (9 if a thesis is not submitted) of which at least 4 must be in HRFS subject-matter courses. Four of the total units, including at least 2 in HRFS subject-matter, must be in 400-level courses.

The minimum grade-point average for admission is 4.0 (A = 5.0). Additional requirements are listed under the individual programs.

INDIVIDUAL DEGREE PROGRAMS

Family and Consumption Economics. The family and consumption economics (FACE) programs are interdisciplinary. Admission requirements include one semester of principles of economics plus a course in applied statistics. Major areas of faculty research include satisfaction related to levels and standards of living and quality of living for families and individuals, and human capital with emphasis on education and employment of women.

Master of Science: The M.S. program requires 2 units from FACE 313 and 370, 2 units of thesis from FACE 499, and 2 units from economic theory, Economics 400-401 or 402-403. Six of the 8 units must be taken in residence.

Doctor of Philosophy: Requirements include: (1) 4 units from FACE 313, 370, 470, and 493; 2 units from economic theory; 2 units at the 400 level from economics or agricultural economics; a graduate-level applied statistics course; two graduate-level courses in sociology and/or psychology, or one course in these areas and Human Development and Family Ecology 410; 8 units of thesis, FACE 499; (2) two of the three stages must be in residence; and (3) four written examinations, one in family economics, one in consumption economics, one in economic theory, and one in the candidate's second minor.

Foods and Nutrition. Major areas of faculty research interest include: infant nutrition; mineral, protein, and amino acid metabolism; nutrient retention in foods; biochemistry of food enzymes; and use of soybeans and soy products in human food.

Master of Science or Master of Arts: For admission, candidates must have had an undergraduate foods course with an organic chemistry prerequisite, a nutrition course with organic chemistry and physiology prerequisites, adequate training in chemistry including quantitative analysis and organic, and introductory courses in college algebra and microbiology. Deficiencies may be made up during the first year of graduate study.

In the graduate study program, foods or nutrition may be emphasized or a balanced program planned. A minimum of 8 units (9 if a thesis is not submitted), of which at least 4 must be in foods and nutrition, must be completed. Four of the total units, including at least 2 in foods and nutrition, must be in 400-level courses. Foods and Nutrition 324, 330, 422, 432, and 493 or 499 and Biochemistry 350 or 352 and 353, and 355 are required. Additional courses may be taken in foods and nutrition or in related departments.

Doctor of Philosophy: For admission, in addition to the prerequisites listed above for a master's degree, a candidate must have taken courses in calculus and physics. Deficiencies may be made up during the first year of graduate study. If a candidate has a master's degree in foods and nutrition or a related area, a minimum of 8 units of course work and 8 units of thesis research are required. Required courses include at least 3 units of foods and nutrition, 2 at the 400 level; advanced courses in biochemical theory and methods; a course in statistics; and an advanced course in food microbiology or mammalian physiology. Additional courses in the above areas or in animal nutrition, food science, or nutritional sciences are selected to satisfy course requirements. Thesis research can be done in foods or in nutrition. If the candidate does not have a master's degree in foods and nutrition or related areas, 16 units of course work are required in addition to 8 units of thesis research.

General Human Resources and Family Studies. The master's program in general human resources and family studies allows the candidate to obtain greater breadth than is possible in one of the more specialized areas. Candidates are required to take a minimum of 4 units from prescribed courses in three of the five specialized fields in HRFS. Six of the 9 required units must be in residence.

Home Economics Education. The M.S. program in home economics education requires that candidates hold a valid teaching certificate for home economics or have successfully completed Illinois certification requirements, and earn at least 8 units of graduate credit at, or accepted by, the University of Illinois at Urbana-Champaign, 4 of the units in human resources and family studies. Three of the 8 units must be at the 400 level, with at least 1 of these in human resources and family studies. Four ½-unit courses are specified in educational psychology and educational policy studies. At least 2 units must be in home economics education. Advisers for students in this program are in the Division of Home Economics Education.

Human Development and Family Ecology. For the M.S. or A.M. in human development and family ecology, the student may specialize in study of either the family or some stage of the life span. Upon completion of the master's degree qualified students may request transfer to a department which offers the Ph.D. in a closely related field. Major areas of faculty research include life span development, family interaction/ecology, developmental family biology, gerontology, cognitive development, social competency, child advocacy/parent education, and service programs/administration. Minimum admission requirements include foundation courses in both human development and family relationships. Admission to the master's degree program is based on a combination of criteria. Applicants should have a strong background in the biological and behavioral sciences, and an undergraduate major in human development and family ecology or a closely related area. Course work in statistics and Graduate Records Examination scores are given special attention in considering candidates. For the degree, candidates must complete a minimum of 8 units including 2 units of thesis or 9 units if a thesis is not submitted. Four of the total units, including at least 2 in human development and family ecology, must be in 400-level courses.

Textiles and Clothing. Major areas of faculty research include social-scientific analyses of human behavior related to apparel; crosscultural aspects of apparel; consumer behavior, knowledge, and concerns about textile items; durability and wear characteristics of fabrics and garments; soiling and soil removal problems; and flammability. Collections of historic costumes and textiles are special resources available for study.

Master of Science or Master of Arts: Admission requirements include a basic course in each of the following areas: art, chemistry (including organic), economics, flat-pattern design, sociology, textiles, and psychology. Deficiencies may be made up during the first year of graduate study. The graduate program must include 4 units chosen from Textiles and Clothing 380, 386, 480, 487, 493, and 499. A graduate-level statistics course is also required. Additional courses are selected in accordance with the special interests of the student.

Financial Aid. University Fellowships and fellowships in the College of Agriculture, tuition and service fee waivers, research assistantships, and teaching assistantships are available in the several programs.

JOURNALISM

Head of the Department: Thomas B. Littlewood
Director of Graduate Studies: Jay Jensen
Correspondence and Information: Department of Journalism, University of Illinois at Urbana-Champaign, 119 Gregory Hall, Urbana, Illinois 61801

FACULTY

Professors: T. Guback, J. Jensen, T. Littlewood, T. Peterson, J. Schacht
Associate Professors: G. Gilmore, G. Hanson, R. Hildwein
Assistant Professors: H. Fuson, A. Kreiling, P. Miller

Graduate Degree Programs. The Department of Journalism offers graduate work leading to the Master of Science degree. The department does not offer a Ph.D. degree. For the program leading to the Doctor of Philosophy in Communications, see page 76.

Admission. Applicants must possess a bachelor's degree from an accredited U.S. institution or one of recognized standing abroad. A grade-point average of 4.0 (A = 5.0) is the minimum requirement for admission to the Graduate College, with exceptions by petition only. Because the master's program has an enrollment ceiling, some applicants with grade-point averages of 4.0 or higher may not be admitted. It is imperative that all applicants supply writing samples and a personal statement about journalism and their commitment to it. Letters of recommendation, Graduate Record Examination or other test scores, and, it possible, a personal interview with the head of the department or director of graduate studies are also helpful.

Master of Science. The following are the requirements for the degree: (1) A major of 4 units, or 3 units and 1 additional unit approved by the department. Candidates without undergraduate work in journalism or equivalent professional experience are required to complete 1 unit of news editing, 2 units in writing, and 1 unit in graphics and photojournalism. (2) A thesis, or preparation of a topic in journalistic form for publication or broadcast, or both, for 1 unit each. (3) A minimum of 3 units in courses at the 400 level, at least 2 of which must be in journalism. (4) A written report on the current master's reading list. (5) A minimum total of 8 units with a grade-point average not lower than 3.875.

Financial Aid. See the description of the University Fellowship and tuition and service fee waiver program in the introductory section of this catalog. Assistantships (teaching or research) are awarded on a quarter-time to two-thirds-time basis at a salary of not less than $1,895 to $5,052 for the academic year. Assistantships carry a waiver of tuition and fees except the hospital-medical-surgical fee. To be considered for financial aid, applications, including transcripts and three letters of recommendation, must be received no later than February 15. Students with journalism degrees or professional experience may become candidates for part-time positions in other units of the University that require journalistic skills in writing, editing, and/or photography and graphics.

LABOR AND INDUSTRIAL RELATIONS

Director of the Institute of Labor and Industrial Relations: M. Rothbaum
Correspondence and Information: Assistant to the Director, Institute of Labor and Industrial Relations, University of Illinois at Urbana-Champaign, 504 East Armory Avenue, Champaign, Illinois 61820

FACULTY

Professors: T. Connors, M. Derber, W. Form, W. Franke, P. Hartman, C. Hulin, M. Rothbaum, J. Scoville, K. Taira, H. Triandis, M. Wagner
Associate Professors: W. Adelman, P. Feuille, A. Harrison, R. Mannweiler, R. Peters, S. Rosen
Assistant Professors: F. Blau, H. Elkiss, W. Hendricks, M. Hoyman, L. Kahn, L. Stallworth, V. Talbott

Graduate Degree Programs. The Institute of Labor and Industrial Relations offers graduate work leading to the Master of Arts and Doctor of Philosophy degrees. Students who wish to study at the Institute of Labor and Industrial Relations must meet the general admissions requirements of the Graduate College as well as the specific requirements of the institute.

Graduate study at ILIR is based on two assumptions: that the multidisciplinary approach to the study of labor and industrial relations provides the best preparation for students planning careers in the field, and that a flexible curriculum offers mature students the best opportunity to pursue their interests while fulfilling the requirements for advanced degrees.

Master of Arts. Admission to the master's program is based on a review of each applicant's undergraduate course and grade record, letters of reference, and statement of interests and goals. Normally, successful completion of a course in statistics and an average grade of B in the last 60 hours of undergraduate work are the minimum requirements for admission. A deficiency in statistics may be made up by taking the required course without graduate credit during the first semester of graduate study.

Prospective students should note that most institute courses are in the social sciences and often have certain prerequisites. These requirements are normally met through appropriate undergraduate courses. If a student lacks these prerequisites, an instructor may require additional preparation or course work before admitting the student to the course.

Students who are uncertain about enrolling at the institute because they believe their undergraduate preparation is not sufficient are encouraged to consult with the assistant to the director or with members of the faculty, either in person or by mail.

ILIR offers two program options for the A.M. degree, one requiring 8 units of work including a thesis, the other requiring 10 units of work including a tutorial. The thesis option is more specialized and research oriented. Students need not make their choice until they have completed one semester. Either option normally takes three semesters to complete.

The only requirements for all master's candidates are courses in Labor and Industrial Relations 491, Industrial Relations Systems, LIR 492, Research Methods, and LIR 493, Quantitative Methods; and a final comprehensive oral examination. The fields of concentration are: unions, management, and labor relations policy; organizational behavior and personnel management; and human resources utilization and development.

The master's program can lead to a professional, terminal A.M. degree, or it can prepare students to continue their graduate study in law or for a Ph.D.

Joint J.D./A.M. The joint degree program with the College of Law leads to the J.D. degree and the A.M. degree in labor and industrial relations in three and one-half years. Students must apply to both the College of Law and the Institute of Labor and Industrial Relations and must be accepted by both units.

Doctor of Philosophy. A student interested in earning a Ph.D. degree after receiving a master's degree at the institute should so indicate upon application for admission. A student with a master's degree from another institution may apply for entrance directly into the doctoral program. The master's degree should be in labor and industrial relations or an allied field such as business administration, economics, history, sociology, political science, or psychology. The applicant should submit, with the application, evidence of research competence (master's thesis, term papers, an undergraduate thesis, special reports, or published articles). All papers will be returned.

The Ph.D. program in labor and industrial relations combines flexibility with intellectual rigor. For each candidate, a core of courses in research methodology and industrial relations theory is linked with a set of courses in a major discipline and other social sciences which are most relevant to a selected area of specialization and to a thesis problem. Examples of areas of specialization include: wage-price policy and economic planning; labor-management relations in the public sector; labor markets and human resources; motivation, morale, and job satisfaction; organizational behavior; international comparative labor problems; and employment discrimination. The Ph.D. degree requires 24 units of credit beyond the baccalaureate degree, satisfactory completion of preliminary examinations in industrial relations theory and the area of specialization, and a dissertation.

Financial Aid. The institute offers research assistantships to high-ranking graduate students and to new students whose undergraduate records are superior. Assistantships pay a salary plus exemption from tuition and service fees. The Graduate College awards fellowships which carry stipends plus tuition and fee waivers. Tuition and service fee waivers may also be granted but do not carry a stipend.

Research Interests. Current institute research projects are in the areas of labor-management relations, organizational behavior, development and utilization of human resources, and public policy as it relates to labor relations and government regulations. These matters are studied in the context of social, economic, and political change and are analyzed with the help of theoretical and empirical formulations of economics, history, law, political science, psychology, and sociology.

The Labor and Industrial Relations Library has an extensive collection of books, monographs, journals, and current reporting services in the industrial relations field. The library staff works closely with students and faculty members to service their course and research needs and to provide information services in response to requests from outside the University.

LANDSCAPE ARCHITECTURE

Head of the Department: Robert B. Riley
Coordinator of the Graduate Program: Lewis D. Hopkins
Correspondence and Information: Coordinator of the Graduate Program, Department of Landscape Architecture, University of Illinois at Urbana-Champaign, 57 Mumford Hall, Urbana, Illinois 61801

FACULTY

Professors: W. M. Keith, W. R. Nelson, R. B. Riley, D. L. Slotnick
Associate Professors: A. J. Rutledge, R. W. Zolomij
Assistant Professors: L. D. Hopkins, J. W. Taylor, E. S. Weidemann, D. C. Wilkin

Graduate Degree Program. The Department of Landscape Architecture offers work leading to the Master of Landscape Architecture. The program is designed to enable students to gain fresh insights and to experiment with new applications pertaining to land and its use by people. Courses and faculty research activities are concentrated

in two major areas: land resources planning and design-behavior interaction. Before submitting an application, students should obtain a pamphlet from the department which describes the specific areas of study and the time needed to complete the requirements.

Admission. The Graduate College admissions requirements apply. Students are admitted on an individual basis according to a review of their prior accomplishments with an emphasis on academic achievement. Candidates from undergraduate design programs must accompany applications with samples of their design work. Candidates without undergraduate preparation in landscape architecture will be admitted on limited status and must complete undergraduate prerequisite courses in addition to graduate work.

Master of Landscape Architecture. A student must complete a minimum of 12 units with at least 6 units taken within the department and at least 3 units of electives chosen from courses offered outside the department. At least 4½ units must be taken in 400-level courses. Specific courses to be taken are determined in consultation with an adviser. These courses must culminate in either a master's project (Landscape Architecture 498) or a master's thesis (Landscape Architecture 499), which permits the student to pursue in depth and independently a project of particular interest, to synthesize knowledge and skills from previous course work, and to demonstrate competence to do work of professional caliber.

Financial Aid. Students compete for fellowships, tuition and service fee waivers, and assistantships.

LATIN AMERICAN AND CARIBBEAN STUDIES

Director of the Center for Latin American and Caribbean Studies: MERLIN H. FORSTER
Correspondence and Information: Center for Latin American and Caribbean Studies, University of Illinois at Urbana-Champaign, 1208 West California Avenue, Urbana, Illinois 61801

FACULTY

Professors: W. BAER, W. BLAYLOCK, J. CASAGRANDE, C. DEAL, F. DOVRING, R. FERBER, F. FLIEGEL, R. FINDLEY, W. FORM, M. FORSTER, D. GROVE, J. HILL, D. LATHRAP, A. PASQUARIELLO, R. PRETO-RODAS, E. RAE, R. REISNER, M. SALTARELLI, S. SCHMIDT, R. SCOTT, J. THOMPSON, N. WHITTEN, R. ZUIDEMA
Associate Professors: A. AIEX, D. BUTTERWORTH, P. DRAKE, M. FRANCESCATO, J. KARR, S. KRONUS, S. LO, J. LOVE, T. MEEHAN, M. SOLAUN, J. STEWART, H. TRUEBA, J. VAN ES
Assistant Professors: A. CARRENO, D. COES, M. LEWIS

Graduate Programs. Graduate minors in Latin American and Caribbean studies are administered by the director of the Center for Latin American and Caribbean Studies.

Candidates for the master's degree who elect a minor in Latin American and Caribbean studies must complete 2 units from the courses prescribed by the center. Doctoral candidates who elect a minor in this area must complete 4 units for a sole minor, or 2 units for a split minor. Courses must be taken in at least two departments; lists of courses fulfilling the minor are available from the center.

Students in technical and professional colleges and schools of the University of Illinois at Urbana-Champaign who seek knowledge of Latin American and Caribbean affairs, culture, and languages are invited to consult with the director of the center, or with their advisers, in order to develop programs suited to their individual needs. Such a program may often be adopted as a special minor under existing regulations if the student so desires. These courses are of particular value to students who intend to carry on technical or professional work in the Latin American and Caribbean area for government, private business, publishing, or religious organizations.

LAW

Dean of the College of Law: JOHN E. CRIBBET
Associate Dean: PETER HAY
Director of Graduate and International Legal Studies: RALPH REISNER
Correspondence and Information: College of Law, University of Illinois at Urbana-Champaign, 209 Law Building, Champaign, Illinois 61820

FACULTY

Professors: M. W. BENFIELD, R. G. COHN, J. J. COSTONIS, J. E. CRIBBET, R. W. FINDLEY, G. T. FRAMPTON, M. S. GRAHAM, W. D. HAWKLAND, P. H. HAY, E. F. HESS, C. KIM, H. D. KRAUSE, W. R. LAFAVE, J. M. LANDERS, P. B. MAGGS, J. H. MCCORD, T. D. MORGAN, J. O'CONNELL, W. PAINTER, C. W. QUICK, R. REISNER, R. SIMON, V. J. STONE, J. N. YOUNG
Associate Professors: K. T. LOPATKA, P. MARCUS, J. E. NOWAK, R. D. ROTUNDA
Assistant Professors: M. L. FELLOWS, J. SHERMAN, E. W. SHOBEN

Graduate Degree Programs. The College of Law offers a program of graduate work leading to the Master of Laws, Master of Comparative Law, and Doctor of the Science of Law.

Master of Comparative Law. A student whose undergraduate study in law has been in systems based on the Anglo-American common law is eligible to apply for candidacy for the Master of Laws or Doctor of the Science of Law. A foreign lawyer whose prior law study has been in a system which is not based on the Anglo-American common law may, in exceptional cases, be admitted to candidacy for Master of Laws or Doctor of the Science of Law, or such a foreign lawyer may apply for candidacy for the Master of Comparative Law. The Master of Comparative Law program is designed to develop facility in the comparative method and to prepare a foreign lawyer to deal knowledgeably with Anglo-American problems. Admission standards, as well as residency, course grade average, and other requirements, except for a thesis, are substantially the same as for the Master of Laws and Doctor of the Science of Law programs.

Master of Laws and Doctor of the Science of Law. For admission, an applicant must have received a first degree in law from a law school which has graduation requirements substantially the same as the University of Illinois College of Law and must present evidence of ability to do satisfactory work at the graduate level. A candidate for the Master of Laws (LL.M.) must have a grade-point average of at least 4.0 (A = 5.0) in all law work previously undertaken. A student who is a candidate for the degree of Doctor of the Science of Law (J.S.D.) is normally required to have a grade-point average of 4.0 in all law work previously undertaken, and also to present evidence of the ability to do independent research; the latter requirement may be met by the submission of satisfactory legal writing done while the applicant was a candidate for the Juris Doctor (or equivalent degree), or subsequent to the receipt of that degree.

One academic year in residence is required of a candidate for an advanced degree. The programs for the LL.M. and J.S.D. degrees consist of course work and research which have been approved by the committee on graduate study of the College of Law, comprising at least 8 units of graduate work of which at least 2 for the master's degree and 4 for the doctor's degree must be in research. In addition to the course work and research, a thesis is required. For the master's degree, the thesis may be completed during the year in residence. For the doctoral degree, the thesis must be submitted not less than one year nor more than five years after the completion of the residence requirement, and the candidate must pass an oral examination before a committee of the faculty. The program for the Master of Comparative Law consists entirely of course work and must include satisfactory completion of Law 402, Introduction to U.S. Law. The candidate for the Master of Laws or the Master of Comparative Law degrees must maintain a grade-point average of 3.5 in graduate or profes-

sional law courses; the candidate for the Doctor of Science of Law, an average of 4.0.

Financial Aid. The College of Law offers seven teaching assistantships to students whose backgrounds have been in the Anglo-American common law system and four teaching assistantships for students with backgrounds in other legal systems. In addition, a limited number of fellowships and waivers of tuition and service fees is available. All types of financial aid enable students to complete the degree requirements within the regular time limits. Because of the keen competition for the few available financial grants, application for these should be made as early as possible, preferably by January 1.

LAW AND SOCIETY

Correspondence and Information: Rita J. Simon, Program in Law and Society, University of Illinois at Urbana-Champaign, 326 Lincoln Hall, Urbana, Illinois 61801

The relationships between law and society are of considerable interest to many students who may wish to focus a part of their programs of study in this area. The Program in Law and Society, in cooperation with faculty members of the College of Law, the School of Social Work, and the Departments of Political Science, Psychology, Sociology, and Urban and Regional Planning, regularly offers seminars to faculty, graduate students, and other interested scholars.

LEISURE STUDIES

Head of the Department: Joseph J. Bannon
Correspondence and Information: Head, Department of Leisure Studies, University of Illinois at Urbana-Champaign, 104 Huff Gymnasium, 1200 South Fourth Street, Champaign, Illinois 61820

FACULTY

Professors: J. J. Bannon, A. V. Sapora
Associate Professors: R. J. Burdge, S. L. Gunn, J. L. Kelly, M. G. Wade
Assistant Professors: L. A. Barnett, D. J. Brademas, J. E. Christensen, G. A. Lowrey, Jr., C. A. Peterson, G. C. Roberts

Graduate Degree Programs. The Department of Leisure Studies offers a program of study leading to the Master of Science and the Doctor of Philosophy degrees. The Master of Science program prepares supervisors and administrators for public parks and recreation systems, treatment centers for the ill and handicapped, and various private and semipublic settings providing leisure services, or the M.S. may serve as the first step toward the Ph.D. program. The Ph.D. program is, in general, designed to train teacher-scholars and research personnel in the study of leisure behavior, the management of leisure service delivery systems, or both.

Admission. The Graduate College admissions requirements apply. The departmental graduate committee considers the candidates' maturity, experience, and commitment to the field in making admissions decisions. The previous degree field is of importance, and preference is given to those with a solid array of undergraduate courses in recreation or, for Ph.D. applicants, a master's degree in the field. Preference is also given to applicants who will be full-time students and active degree candidates.

Master of Science. A candidate for the M.S. degree must spend at least one semester on campus and complete a minimum of 8 units, 3 of which must be in the 400 series. Four of these units should be in the student's area of specialization. A thesis may be

written for 2 units' credit. A full-time student can complete the program in three or four semesters.

Doctor of Philosophy. A candidate for the Ph.D. must spend at least two years in residence and satisfactorily complete a minimum of 16 units beyond the master's degree. These units include the credit for the Ph.D. dissertation. Two languages are required, but this requirement may be waived, provided 2 additional units of course work are substituted for each language. Graduate examinations include written preliminary examinations taken at the completion of formal course work, oral preliminary examinations on the proposed research of the thesis, and a final examination in defense of the doctoral thesis.

Financial Aid. The department offers quarter-time and half-time assistantships in both teaching and research. If possible, students should indicate a desire for this type of part-time employment when applying for admission.

LIBRARY SCIENCE

Director of the School of Library Science: H. GOLDHOR
Correspondence and Information: Graduate School of Library Science, University of Illinois at Urbana-Champaign, 7a Library, Urbana, Illinois 61801

FACULTY

Professors: H. GOLDHOR, D. W. KRUMMEL, F. W. LANCASTER, R. E. STEVENS, M. E. WILLIAMS
Associate Professors: W. C. ALLEN, J. L. DIVILBISS, K. L. HENDERSON, S. RICHARDSON, C. E. THOMASSEN
Assistant Professors: R. E. BROWN, J. K. MILLER, L. SMITH

Graduate Degree Programs. The purpose of the Graduate School of Library Science is to prepare men and women for careers as professional librarians in all types of libraries. Programs of study are the Master of Science and Doctor of Philosophy in Library Science, and the Certificate of Advanced Study in Librarianship.

Admission. In addition to the Graduate College requirements, applicants to all degree programs must submit scores for the aptitude test of the Graduate Record Examination taken within the previous five years. International students must score at least 585 on the Test of English as a Foreign Language. In addition, consideration is given to language study, library or related work experience, letters of reference, and other evidence of leadership.

Master of Science. Ten units of graduate study, including 2 units of Library Science 300, are required of all students, to be completed in a maximum of five years. Possible areas of specialization include all main types of libraries (academic, public, school, and special), and all main types of work in libraries (such as cataloging, reference, and children's services). Each student's program of study, adapted to his or her particular needs and purposes, is planned in consultation with a faculty adviser.

Certificate of Advanced Study. This program is open to those who hold a master's degree in librarianship from an accredited library school and who have a minimum of two years of acceptable professional library experience since receiving the degree. Applicants for the program must have maintained a grade-point average of at least 4.0 (A = 5.0) in the master's program. The certificate is awarded upon the successful completion of 8 units of graduate course work beyond the master's degree. Of the 8 units, at least half must be in library science.

Doctor of Philosophy. Applicants must have a master's degree in library science from an accredited library school with a 4.0 grade-point average; two years of library work experience at the professional level; three letters of recommendation, including

one from a library work supervisor; and an interview with a faculty committee. Ten units of graduate course work in residence are required. Proficiency in a research tool such as a foreign language, computer programming, or statistics must be demonstrated and a dissertation completed.

Financial Aid. Financial aid is available in the form of fellowships, tution waivers, graduate assistantships, hourly paid work, and loans. In recent years half or more of all students have been given some aid.

Research Interests. Major areas of faculty research interest are bibliography, cataloging and classification, information storage and retrieval, library automation, nonprint media, library services for children and young adults, and reference tools and services.

The University of Illinois Library has more than five million books and is the largest library of any university with an accredited library school. The school has an extensive program of publication (including *Library Trends*), and of continuing education offerings (including the Allerton Institutes).

LIFE SCIENCES

(Including Interdepartmental Biology Programs; Botany; Ecology, Ethology, and Evolution; Entomology; Genetics and Development; Microbiology; and Physiology and Biophysics)

Director of the School of Life Sciences: Joseph R. Larsen
Correspondence and Information: Director of the School of Life Sciences, University of Illinois at Urbana-Champaign, 387 Morrill Hall, Urbana, Illinois 61801

Graduate Degree Programs. The School of Life Sciences includes the Departments of Botany; Ecology, Ethology, and Evolution; Entomology; Genetics and Development; Microbiology; and Physiology and Biophysics. Study programs leading to the graduate degrees of Master of Science and Doctor of Philosophy exist in each of the departments and are described in detail in the following pages. In addition, interdepartmental study programs leading to the Ph.D. in cell biology and virology, environmental biology, neural and behavioral biology, and plant physiology are administered within the school. The school also participates with other departments of the University of Illinois at Urbana-Champaign in offering the Ph.D. program in genetics (see page 97).

Financial Aid. Support for graduate training is available in the form of teaching or research assistantships and University fellowships. Prospective students may obtain application forms and relevant information for departmental study programs from the executive officer of the appropriate department, or for interdepartmental study programs from the School of Life Sciences.

Interdepartmental Biology Programs

Executive Officer of Biology Programs: Robert W. Tuveson
Correspondence and Information: Biology Programs, 387 Morrill Hall, University of Illinois at Urbana-Champaign, Urbana, Illinois 61801

Graduate Degree Programs, Admission. Interdepartmental biology programs lead to the Ph.D. in cell biology and virology, ecology, neural and behavioral biology, and plant physiology. Biology programs also participate in the administration of the Ph.D. program in genetics (see page 97). Additionally, two master's programs (M.S. in Biology, and M.S. in the Teaching of Biological Sciences and General Science) are offered. Graduate Record Examination scores are required for all Ph.D. programs and for the M.S. in the Teaching of Biological Sciences and General Science. All applicants also must outline their educational objectives in a brief statement and must submit three letters of recommendation.

Master of Science in the Teaching of Biological Sciences and General Science. This degree is intended for persons planning to enter the teaching profession or who presently are teaching biology or general science in junior high school, high school, or junior college. It is awarded upon the completion of the fifth year in the teacher-education curriculum in biological and general science or upon completion of 8 units of advanced credit (outlined below) and certification. For admission to this program, students must have an admission average of at least 4.0 (A = 5.0), and Graduate Record Examination scores must be submitted.

Candidates for the Master of Science in the Teaching of Biological Sciences and General Science must earn 4 units in biological sciences, 2 units in education (see page 84), and 2 units in electives. Electives may be in the biological sciences, education, or, in exceptional cases, other fields. A course in biological chemistry is strongly advised. Students who are preparing for high school teaching and who are not yet certified must fulfill state certification requirements.

Master of Science in Biology. This program is designed by the student in consultation with an appropriate adviser. While general training in biology is encouraged, concentration in any area of biology is possible as well; however, students intending to concentrate in botany, entomology, microbiology, animal physiology, or biophysics should apply directly to the appropriate School of Life Sciences departmental graduate program. Admission requires a grade-point average of at least 4.0. Although no specific undergraduate courses are required for admission to this curriculum, a minimum of a year of physics with laboratory, a course in organic chemistry with laboratory, and a semester of calculus must be completed before a degree is granted. Of the 8 units required for the degree, at least 3 units must be taken in 400-level courses. A thesis is not required, but a research report covering at least 1 unit of individual problem work must be completed. A comprehensive examination may be required of all candidates.

Doctor of Philosophy in Biology. The School of Life Sciences offers the doctorate in several interdepartmental areas: cell biology and virology, ecology, neural and behavioral biology, and plant physiology. Entrance requirements, in addition to those listed for the Master of Science, include background training in general biology, physics, biochemistry, and calculus; deficiencies in these areas may be remedied during the first year of graduate study. Programs are designed to suit individual needs in consultation with advisers. Students who have been accepted for one of these programs may select as a major adviser a faculty member from any department in the School of Life Sciences, or an appropriate member of a cooperating department. Additional information may be obtained from the School of Life Sciences. Descriptions of these area doctoral programs are given below.

Cell Biology and Virology. The cell biology and virology program emphasizes molecular mechanisms and is therefore addressed to students who have acquired or wish to acquire a strong background in chemistry. Areas of research open to students in this program include cytochemistry, biochemistry of subcellular systems, cellular differentiation, intercellular regulation of meiosis and mitosis, circadian rhythms, cellular genetics, and virology.

Ecology. The ecology program is an interdepartmental approach to the study of the basic interrelationships between organisms and their environment, and the structure and the function of ecosystems. Areas of specialization include physiological, population, community, systems, and evolutionary ecology.

Ecology, Ethology, and Evolution. See page 119.

Genetics and Development. See page 120.

Neural and Behavioral Biology. This multidisciplinary program includes staff members from physiology, biochemistry, biophysics, ethology, engineering, and basic medical sciences. The program is heavily research oriented, with individually tailored plans of study designed to provide students with a strong background in the collective disciplines of neurobiology and in the students' specific areas of concentration. Research areas include neuroanatomy, neurochemistry, neuroendocrinology, neurobiological development and genetics, neurophysiology, and ethology and physiological psychology.

Plant Physiology. Plant physiology, an interdepartmental area of specialization, is staffed by plant physiologists from five plant science departments: agronomy, botany, forestry, horticulture, and plant pathology. Thesis research can be conducted in any of these departments. Areas of research include photosynthesis, respiration, membrane transport, nitrogen metabolism, hormones and nucleic acids, herbicide action, water relations, environmental physiology, and disease physiology. In addition to plant physiology, students are required to complete courses in biochemistry and physical chemistry.

Botany

Head of the Department: Larry N. Vanderhoef
Correspondence and Information: Associate Head of the Department of Botany, University of Illinois at Urbana-Champaign, 289 Morrill Hall, Urbana, Illinois 61801

FACULTY

Professors: F. A. Bazzaz, J. S. Boyer, Z. B. Carothers, J. M. J. de Wet, D. B. Dickinson, Govindjee, C. H. Grunwald, J. B. Hanson, L. R. Hoffman, T. L. Phillips, D. P. Rogers, R. W. Tuveson, L. N. Vanderhoef
Associate Professors: C. J. Arntzen, J. L. Crane, F. Meins, M. L. Sargent, D. S. Seigler
Assistant Professors: C. A. Shearer, C. A. Wraight, D. A. Young

Graduate Degree Programs. The Department of Botany offers graduate work leading to the Master of Science and Doctor of Philosophy degrees. It also participates in interdepartmental study programs leading to doctoral degrees in cell biology and virology, ecology, genetics, and plant physiology.

Areas of specialization available within the department include: anatomy, bioenergetics, biophysics, circadian rhythms, cytology, development, ecology, genetics, mycology, paleobotany, photosynthesis, phycology, physiology, phytochemistry, systematics, and ultrastructure. Graduate students are expected to acquire reasonable breadth in their botanical backgrounds as well as depth in their areas of specialization. A knowledge of the principles of ecology, genetics, morphology, physiology, and systematics is strongly recommended.

Teaching assistantships, fellowships, and research assistantships are available for qualified students. Any student who is awarded a fellowship may elect to have his or her stipend augmented with a part-time teaching or research assistantship.

A brochure providing additional information about the department, its facilities, and the research interests of its faculty is available from the associate head upon request.

Admission. All applicants for admission are considered on an individual basis. While departmental requirements do not specify particular courses as prerequisites for admission, applicants should have had some undergraduate training in botany or biology and related sciences. Graduate Record Examination scores are required. Graduate College admission requirements also apply.

Master of Science. Candidates for the M.S. degree are expected to fulfill the requirements of the Graduate College, and to broaden and deepen their training in a program of course work and research agreed upon with a faculty adviser. A thesis may be required at the option of the candidate's adviser.

An evaluation of each student's academic progress will be made at the end of his or her second year of graduate study; departmental approval must be obtained at this juncture to continue in a graduate degree program.

Doctor of Philosophy. Candidates for the doctorate are expected to fulfill the requirements of the Graduate College in a program of course work and research under the supervision of a faculty adviser. The department requires a minimum of one foreign language to be completed prior to the preliminary examination, usually chosen from

French, German, Latin, Russian, or Spanish. More than one foreign language may be required at the option of the adviser.

Each student's academic progress will be evaluated during the first two years of graduate study and departmental approval is required to continue toward the Ph.D. degree.

Ecology, Ethology, and Evolution

Head of the Department: L. L. Getz
Correspondence and Information: Department of Ecology, Ethology, and Evolution, University of Illinois at Urbana-Champaign, 515 Morrill Hall, Urbana, Illinois 61801

FACULTY

Professors: E. M. Banks, T. H. Frazzetta, L. L. Getz, A. W. Ghent, J. Hirsch, D. F. Hoffmeister, W. P. Lowry, G. C. Sanderson, P. W. Smith, M. F. Willson
Associate Professors: G. O. Batzli, C. S. Carter-Porges, J. R. Karr, G. H. Kieffer M. R. Lee, M. Salmon, D. C. Sweeney
Assistant Professors: R. M. Fagen, E. E. Herricks, M. R. Lynch, L. R. Maxson

Graduate Degree Programs. The Department of Ecology, Ethology, and Evolution administers graduate degree programs as areas of specialization in biology. Areas of training include ethology, functional anatomy, physiological mechanisms of behavior, evolutionary community and population ecology, biogeography, quantitative analysis of behavioral and ecological systems, resource management, behavior-genetics, karyotype analysis, systematics, and taxonomy.

Admission. Acceptance for graduate study in ecology, ethology, and evolution is based on the applicant's research potential and academic achievement. An undergraduate degree in the life sciences is the usual preparation, but students majoring in mathematics, computer science, or the physical and social sciences are also considered. Courses required for admission are inorganic and organic chemistry, biochemistry, and a year of physics and mathematics through calculus. Students lacking one or more of these courses may be admitted with the provision that such deficiencies be completed in addition to the normal graduate course load. A grade-point average of at least 4.0 (A = 5.0) for the last 60 hours of undergraduate work, in addition to any graduate study, is mandatory, and high scores on the Graduate Record Examination are necessary. Considerable emphasis is placed on a student's interest and ability in research as demonstrated by previous work and letters of recommendation.

Master of Science. With approval of the M.S. Biology Committee, students in ecology, ethology, and evolution may pursue an M.S. degree in biology under the supervision of a departmental adviser (see Master of Science in Biology, page 117).

Doctor of Philosophy in Biology: Ecology, Ethology, and Evolution Area of Specialization. Candidates for the Ph.D. must demonstrate excellence in the three departmental areas and, in consultation with an adviser and doctoral committee, plan and carry out original thesis research with distinction. A qualifying examination covering general knowledge is given early in the student's program, and a preliminary examination, assessing the feasibility and significance of the thesis research, is taken as the student begins thesis work. Courses in both statistics and computer science are required, and proficiency in one or more foreign languages may be required depending on the field of research. Additional requirements are individually prescribed by the adviser and doctoral committee. A final examination in which the student defends the thesis and a presentation of the thesis at a departmental seminar complete the program.

Entomology

Head of the Department: Stanley Friedman
Correspondence and Information: Admissions Committee, Department of Entomology, University of Illinois at Urbana-Champaign, 320 Morrill Hall, Urbana, Illinois 61801

FACULTY

Professors: G. Fraenkel, S. Friedman, A. W. Ghent, W. R. Horsfall, E. R. Jaycox, M. Kogan, W. E. LaBerge, J. R. Larsen, W. H. Luckmann, R. L. Metcalf, R. B. Selander, L. J. Stannard, J. G. Sternburg, G. P. Waldbauer, J. H. Willis
Associate Professors: F. Delcomyn, E. G. MacLeod, P. W. Price
Assistant Professors: S. Berlocher, H. Hummel, W. G. Ruesink

Graduate Degree Programs. The Department of Entomology offers graduate work leading to the Master of Science and Doctor of Philosophy degrees.

Admission. The Graduate College admissions requirements apply. Previous training in entomology is not necessary. It is recommended that students who intend to study for advanced degrees in entomology gain a thorough grounding in the physical and biological sciences, mathematics, and the liberal arts.

Master of Science. A candidate for the M.S. is expected to become knowledgeable in entomology through course and field work and to complete a research thesis in an area of interest arrived at in consultation with an adviser. The grade-point average required for degree certification is 4.0 (A = 5.0).

Doctor of Philosophy. A candidate for the Ph.D. must master the general areas of entomology (bionomics, control, morphology, physiology, and taxonomy) and demonstrate professional competence in a specialized area by presenting an acceptable thesis based on original research. Reading proficiency in a foreign language of importance to the area of research, ordinarily German or Russian, is also required. The grade-point average required for degree certification is 4.0.

Genetics and Development

Head of the Department: E. H. Brown
Correspondence and Information: Department of Genetics and Development, University of Illinois at Urbana-Champaign, 515 Morrill Hall, Urbana, Illinois 61801

FACULTY

Professors: F. J. Kruidenier, J. R. Laughnan, D. L. Nanney, R. B. Selander, D. M. Steffensen, R. W. Tuveson, R. L. Watterson, G. S. Whitt, J. H. Willis, C. R. Woese
Associate Professors: N. E. Alger, E. H. Brown, W. L. Daniel, R. Davenport, E. G. MacLeod, R. MacLeod, F. Meins, M. L. Sargent, D. L. Stocum
Assistant Professors: R. P. Futrelle, L. R. Maxson, W. W. M. Steiner

Graduate Degree Programs. The Department of Genetics and Development offers graduate work in the genetics and development area of specialization leading to the Doctor of Philosophy in Biology. This program offers interdisciplinary training in genetics, developmental biology, and cell biology over many levels of biological organization and in many organisms. Major areas of research open to students in this program are: biochemical, cellular, and population (evolutionary) genetics; developmental regulation and differentiation; and the application of genetics to problems in development and cell biology.

Admission. Applicants for the genetics and development area of specialization are

evaluated on the basis of their educational background, grade-point average (which must be at least 4.0 on a five-point scale), Graduate Record Examination scores (which should be at least in the sixtieth percentile), and letters of recommendation. Applicants should have completed courses in physics, organic chemistry, biochemistry, calculus, statistics, and a foreign language, and have had a broad training in the biological sciences. Applicants who have received an M.S. degree must meet these same requirements and must have at least a 4.0 grade-point average for nonthesis courses which applied to the M.S. degree.

Doctor of Philosophy in Biology: Genetics and Development Area of Specialization. Candidates design a suitable program of study in consultation with a faculty adviser and an advisory committee. The program must include at least 6 units of formal course work pertaining to the student's area of interest, with at least one course each in the areas of cell biology, genetics, and development. Participation in an appropriate seminar course for at least two semesters and reading proficiency in a foreign language (usually French, German, or Russian) are also required. Each student must pass (1) a written qualifying examination intended to ascertain the candidate's breadth of training, the competence in his or her specialty, and the ability to integrate knowledge and communicate in writing; (2) an oral preliminary examination intended to ascertain the student's ability to carry out independent research; and (3) an oral thesis examination at which the student discusses and defends his or her dissertation.

Microbiology

Head of the Department: R. D. DeMoss
Correspondence and Information: Department of Microbiology, University of Illinois at Urbana-Champaign, 131 Burrill Hall, Urbana, Illinois 61801

FACULTY

Professors: M. P. Bryant, R. D. DeMoss, R. E. Kallio, S. Kaplan, R. C. Meyer, Z. J. Ordal, M. E. Reichmann, D. C. Savage, E. W. Voss, C. R. Woese, R. S. Wolfe
Associate Professors: M. G. Gabridge, J. Konisky, J. T. Wachsman, M. J. Weber
Assistant Professors: D. D. Burke, J. F. Gardner, A. C. Helm, S. J. Kaufman, P. K. Y. Wong

Graduate Degree Programs. The Department of Microbiology offers graduate work leading to the Master of Science and Doctor of Philosophy degrees. For both degrees, the program provides a strong basic background in microbiology, biochemistry, and genetics. Students completing the program are qualified for positions in academic, industrial, or governmental environments and particularly for further specialization in a chosen subarea of microbiology and related disciplines.

Major areas of research interest are: genetics and molecular biology of viruses, procaryotes, and eucaryotes; enzyme structure and function; immunology; immunochemistry; rumen microbiology; intestinal microbiology; development of specialized cells, biochemistry of anaerobic bacteria; mechanisms of pathogenesis; metabolic regulation; microbial physiology; animal cell biology; and structure, function, and biogenesis of membranes.

Admission. Students electing microbiology as a major for an advanced degree should have had, in addition to formal training in general biology or microbiology, chemistry through quantitative analysis and organic chemistry, and 15 hours of physical or biological sciences. Mathematics through calculus is strongly recommended.

Master of Science and Doctor of Philosophy. Candidates for graduate degrees design their programs of study in consultation with individually assigned faculty committees. Study programs are flexible and are dependent upon the experience, interests, and goals of each student.

The departmental requirement of a foreign language for the Ph.D. degree may be satisfied by (1) four years of one language at the high school level, or (2) two years

of one language at the undergraduate level, or (3) completion of the 401 language course with a grade of B or better, or (4) earning a passing grade on the Educational Testing Service foreign language examination. A foreign language is not required for the M.S. degree.

Interdepartmental Programs in Cell Biology, Genetics, and Molecular Biology. Candidates in interdepartmental programs may, with the approval of the appropriate program committee, select certain departmental faculty members as research advisers.

Physiology and Biophysics

Head of the Department: James E. Heath
Correspondence and Information: Department of Physiology and Biophysics, University of Illinois at Urbana-Champaign, 524 Burrill Hall, Urbana, Illinois 61801

FACULTY

Professors: J. D. Anderson, L. Barr, D. E. Buetow, A. R. Crofts, E. Donchin, H. S. Ducoff, F. Dunn, Govindjee, J. E. Heath, B. A. Hertig, J. R. Larsen, A. V. Nalbandov, C. L. Prosser, V. D. Ramirez, E. Satinoff, W. W. Sleator, A. B. Taylor, H. I. Teigler, A. R. Twardock, G. Weber, J. S. Willis, C. R. Woese
Associate Professors: J. A. Connor, F. Delcomyn, D. C. DeVault, T. G. Ebrey, S. I. Helman, C. H. Hockman, B. S. Katzenellenbogen, A. Kokko-Cunningham, S. G. Stolpe, D. C. Sweeney, J. E. Zehr
Assistant Professors: J. M. Bahr, D. Bieger, A. L. DeVries, A. S. Feng, R. B. Gennis, P. H. Hartline, E. G. Jakobsson, K. J. Kaufmann, B. W. Kemper, W. B. Rhoten, O. D. Sherwood, C. A. Wraight

Graduate Degree Programs. The Master of Science and Doctor of Philosophy degrees are granted in both physiology and biophysics.

PHYSIOLOGY

Admission and Financial Aid. Graduate College admissions requirements apply. Applicants for graduate study in physiology are screened by an admissions committee. Students should have a broad undergraduate training in physiology, general biology, a premedical course, or a major in chemistry or zoology. Most students admitted in the last two years have had a grade-point average between an A and B, and letters of recommendation that indicated ability to perform graduate work. A limited number of fellowships and teaching or research assistantships is available for qualified students.

Master of Science. A master's degree requires 8 or more units of graduate work drawn from the offerings of this and other departments. Each student must submit a report based on original research and pass an oral examination administered by the physiology qualifying committee.

Doctor of Philosophy. Every candidate for the Ph.D. is required to obtain a firm background in the general areas of mammalian, comparative, and cellular physiology, as well as a high degree of expertise in an area of specialization. The student is also expected to develop proficiency in other appropriate disciplines, such as biochemistry, physical chemistry, statistics, and the history and philosophy of science. Normally, each student is expected to gain a year of experience as a teaching assistant.

The preliminary examination is taken after completion of at least 16 units of graduate course work, after completion of all courses specified by the student's advisory committee, and after satisfying the foreign language requirement. A thesis based on original work and demonstrating thorough knowledge of theory and techniques in one of the branches of physiology must be presented to a review committee before the final examination.

BIOPHYSICS

Admission and Financial Aid. The objective of the program in biophysics is to give students sufficient training in physics, chemistry, and biology to enable them to apply the conceptual, instrumental, and mathematical approaches of the physical scientist to the solution of biological problems. The curriculum is designed primarily for students entering with previous training in the physical sciences, but students with a background only in biology may be eligible. Admission requirements are normally one year of college biology, one year of college physics, chemistry through organic chemistry, and mathematics through calculus, but deficiencies can be corrected while in training. Applicants must have an admission average of at least 4.0 (A = 5.0). A limited number of fellowships, traineeships, and teaching or research assistantships is available for qualified students.

Master of Science. To obtain the Master of Science degree, the student must complete at least 8 units in biophysics and related subjects, including 2 units of 400-level Biophysics courses (excluding individual topic courses, seminars, and research). A thesis or examination in a specialized field is also required.

Doctor of Philosophy. A flexible approach is made to curriculum requirements, but an acceptable course program usually includes the following: (1) physical sciences: mathematics through differential equations, a one-year sequence in physical chemistry, biochemistry with laboratory, classical mechanics, electromagnetic field theory, and elementary quantum mechanics; (2) biological sciences: 3 units of graduate course work in one of the major areas of biology, determined by the research interests of the student; (3) biophysics: satisfactory/completion of 2½ units of 400-level Biophysics courses (excluding individual topic courses, seminars, and research). Other subjects may be taken with the approval of the faculty.

An oral diagnostic conference, administered during the first semester by a three-member committee, aids students in selecting courses for their programs. A pass-fail qualifying examination is given during or before the fourth semester. The requirement of one foreign language should also be satisfied prior to the preliminary examination. Successful completion of the preliminary examination after at least 16 units of formal course work admits the student to candidacy for the degree of Doctor of Philosophy. Normally each student is expected to gain one semester of teaching experience. A thesis based on original work and demonstrating thorough knowledge of theory and techniques in one of the areas of biophysics must be presented to a review committee at a suitable interval prior to the final examination.

LINGUISTICS

(Including Arabic, Modern and Classical Hebrew, Hindi, Persian, and Swahili)

Head of the Department: Braj B. Kachru

Correspondence and Information: Department of Linguistics, University of Illinois at Urbana-Champaign, 2090 Foreign Languages Building, Urbana, Illinois 61801

FACULTY

Professors: J. H. D. Allen (emeritus), E. H. Antonsen, K. O. Aston, W. C. Blaylock, J. B. Casagrande, C. L. Dawson, P. A. Gaeng, B. B. Kachru, Y. Kachru, H. R. Kahane (emeritus), C-W. Kim, C. W. Kisseberth, F. K. Lehman, H. Maclay, J. W. Marchand, C. Osgood, I. Rauch, M. Saltarelli, G. L. Tikku, W. R. Zemlin, L. Zgusta

Associate Professors: L. F. Bouton, G. M. Browne, C. C. Cheng, J. R. Cowan, W. B. Dickerson, R. Dunatov, F. S. Gladney, G. M. Green, H. H. Hock, F. M. Jenkins, M. J. Kenstowicz, S. Makino, J. L. Morgan, D. Wanner

Assistant Professors: D. E. Baron, E. G. Bokamba, P. Cole, D. L. Petersen

Graduate Degree Programs. The Department of Linguistics offers graduate programs leading to the Master of Arts and Doctor of Philosophy degrees. Work toward these degrees is divided into several specialized areas under the general divisions of historical, descriptive, theoretical, and applied linguistics; further specializations include comparative linguistics, historical linguistics, African linguistics, East Asian linguistics, South Asian linguistics, Semitic linguistics, Romance linguistics, articulatory and acoustic phonetics, psycholinguistics, mathematical and computational linguistics, sociolinguistics, and stylistics.

Admission. Undergraduate preparation for admission to the master's program in linguistics should include the equivalent of Linguistics 300, 301, and 302; at least three years of foreign languge experience (familiarity with two foreign languages is recommended); and a broad background in the humanities, social sciences, and mathematics. The Graduate College admissions requirements apply.

Master of Arts in Theoretical or Applied Linguistics. The aim of the master's program is to instruct students in the important areas of linguistics and the methods of linguistic analysis. Candidates for this degree must earn 8 units, including courses in syntax, phonology, history of linguistics, and an area of specialization. Those concentrating on the theoretical program are required to take 401, 402, 441, 442, and 340. The applied program requires 401, 402, 441 and/or 442, and 340. In addition, the student must have proficiency in one language (other than his or her native tongue) in which there exists a significant body of linguistic literature, and must pass the comprehensive qualifying examination. Admission to this examination is contingent upon satisfying the language requirement.

Doctor of Philosophy in Theoretical or Applied Linguistics. Admission to candidacy for the Ph.D. normally requires an average of 4.5 or better for all graduate work in linguistics and distinction in passing the comprehensive qualifying examination. In deciding whether a student will be admitted to the Ph.D. program, the examination and student evaluation committee takes into consideration the student's overall performance in the department, potential for linguistic research, and performance in the qualifying examination.

Candidates for this degree must complete at least 24 units of graduate work, or 16 units beyond the master's degree. The minimum 24 units must include the course requirements listed above for the master's degree (or their equivalent), advanced courses as required for the area of specialization, and 8 units of thesis research. Candidates must also demonstrate proficiency in a second language other than English. However, this second language requirement is made flexible depending on the research interest of the student. The candidate is required to take the preliminary examinations (written and oral) after completion of 8 units beyond the master's level. Students are encouraged to attend at least one summer session of the Linguistic Institute of the Linguistic Society of America. Up to 2 units of credit granted by the host university under this program may be transferred. Students of descriptive linguistics also are urged to establish a vested interest and a firm basic foundation in some particular language family as early as possible in their graduate career. Linguistically oriented courses in related departments may be counted toward the major if approved by the adviser. The head of the department acts as general adviser to each student until the selection of the field of concentration, at which time the student comes under the guidance of an adviser in his or her special area.

MATERIALS SCIENCE

The Materials Research Laboratory supports research and the training of graduate students in the materials sciences, but the laboratory is not itself a degree-granting unit. A student interested in study in materials science should apply directly to one of the following departments, which cooperate in research at the laboratory: Ceramic Engineering, Chemical Engineering, Chemistry, Electrical Engineering, Geology, Metallurgy and Mining Engineering, and Physics.

MATHEMATICS

(Including Statistics)

Head of the Department: Paul T. Bateman
Graduate Supervisor: James W. Armstrong
Correspondence and Information: Graduate Supervisor, Graduate Advising Office, Department of Mathematics, University of Illinois at Urbana-Champaign, 250 Altgeld Hall, Urbana, Illinois 61801

FACULTY

Professors: F. R. Albrecht, K. I. Appel, R. B. Ash, S. B. Bank, R. G. Bartle, P. T. Bateman, I. D. Berg, E. R. Berkson, B. C. Berndt, R. L. Bishop, W. W. Boone, P. G. Braunfeld, D. L. Burkholder, R. W. Carroll, K. Chen, E. C. Dade, M. M. Day, H. G. Diamond, J. L. Doob, R. M. Fossum, C. W. Gear, S. I. Goldberg, J. W. Gray, P. A. Griffith, W. R. G. Haken, M. E. Hamstrom, L. L. Helms, C. J. Janusz, R. P. Jerrard, C. G. Jockusch, S. S. Jogdeo, F. W. Kamber, R. P. Kaufman, F. B. Knight, R. G. Langebartel, P. A. Loeb, D. E. Muller, J. Nievergelt, H. O. Osborn, E. T. Parker, A. L. Peressini, W. V. Philipp, R. R. Rao, I. Reiner, D. J. S. Robinson, H. P. Rosenthal, N. J. Rothman, J. J. Rotman, L. A. Rubel, P. E. Schupp, E. J. Scott, M. Suzuki, G. Takeuti, T. W. Ting, P. M. Tondeur, J. J. Uhl, Jr., H. E. Vaughan, J. H. Walter, P. M. Weichsel, R. A. Wijsman, J. Wolfowitz

Associate Professors: W. Abikoff, J. R. Alexander, Jr., S. B. Alexander, J. W. Armstrong, A. Babakhanian, H. E. Benzinger, Jr., R. E. Bohrer, J. W. Brown, J. D. Buckmaster, R. F. Craggs, L. L. Dornhoff, E. G. Evans, Jr., W. A. Ferguson, R. L. Finney, G. K. Francis, C. W. Henson, H. P. Lotz, L. R. McCulloh, J. B. Miles, C. J. Moreno, H. Paley, N. T. Peck, H. Porta, S. L. Portnoy, D. R. Sherbert, K. B. Stolarsky, W. F. Stout, S. V. Ullom, E. C. Weinberg, J. E. Wetzel, W. M. Zaring

Assistant Professors: F. D. Bateman, C. D. Dade, A. Fauntleroy, E. Gray, L. McLinden, T. D. Morley, J. I. Palmore, E. Peck, C. Phillips, I. M. Reiner, S. S. Wagstaff, Jr.

Graduate Degree Programs. The department offers graduate study leading to the Master of Arts (or of Science) and the Doctor of Philosophy in Mathematics, the Master of Science in the Teaching of Mathematics, and the Master of Arts (or of Science) and the Doctor of Philosophy in Statistics. An advanced certificate in community college mathematics teaching is also available. For detailed information regarding any of these programs, write directly to the graduate supervisor.

Admission. The Graduate College admissions requirements apply. Students may be admitted with full standing if they hold a strong undergraduate degree in mathematics. Students whose undergraduate training in mathematics is deficient will not be admitted to full standing, but may be admitted with deficiencies to be removed during the first year of graduate study.

Statistics. This program of study is for those who wish to concentrate on research in the theory of statistics and to obtain training in the theory and practice of statistical inference from quantitative data. It also provides an appropriate minor for those who wish to develop competence in an area of application of statistics, such as agronomy, biology, chemistry, economics, education, geology, physics, or psychology.

Master's Degree Programs. The master's programs can be completed in one year of full-time study by students entering without deficiencies. However, most students find it necessary to devote at least one additional summer or semester. Students entering with deficiencies may require up to two years to complete the degree. There are no thesis or language requirements and no comprehensive examination is required.

The master's in mathematics may be earned through study in one of three different programs. The General Program requires a total of 8 units of study, 3 of which must be in mathematics at the 400 level. No more than 2 units of approved

electives are permitted. Mathematics 347 and 348 as well as one other approved sequence in mathematics must be completed either at the undergraduate or graduate level. The Specialized Program in Applications of Mathematics to the Physical Sciences and the Specialized Program in the Mathematics of Computation or Optimization have similar requirements.

The master's in the teaching of mathematics requires a total of 8 units of study, of which 4 must be in mathematics and 2 must be in education. Mathematics 318 and 347 (or 344) are required.

The master's degree in statistics requires a total of 8 units of study, including at least three 400-level courses of which two must be approved courses in statistics. Mathematics 365 is required.

The advanced certificate in community college mathematics teaching is designed to be completed in two semesters following completion of a master's degree in mathematics. The program involves student teaching and specialized course work.

Doctoral Degree Programs. Students working toward one of the doctoral degrees usually require from four to six years to complete the requirements. These students must pass the qualifying examination (testing the content of undergraduate courses in abstract and linear algebra and real and complex analysis), pass the preliminary examination (testing the content of four areas of graduate mathematics selected by the student and approved by the department), and write a thesis in an area of mathematical research. A reading knowledge of two of the following languages is required: German, French, or Russian.

Financial Aid. Financial aid is available in the form of teaching assistantships, fellowships, and tuition and fee waivers. The deadline for submission of complete fellowship applications is February 15. The initial deadline for submission of complete assistantship applications is also February 15, but applications are considered after that as long as positions remain available. For information write to the graduate supervisor.

MECHANICAL AND INDUSTRIAL ENGINEERING

Head of the Department: B. T. Chao
Associate Head of the Department: J. W. Bayne
Graduate Policy Committee Chairperson: C. O. Pedersen
Graduate Policy Committee Cochairperson: J. S. Liebman
Correspondence and Information: Graduate Programs Office, Department of Mechanical and Industrial Engineering, University of Illinois at Urbana-Champaign, 144 Mechanical Engineering Building, Urbana, Illinois 61801

FACULTY

Professors: A. L. Addy, J. W. Bayne, B. T. Chao, J. C. Chato, M. M. Chen, W. L. Chow, A. G. Friederich, B. A. Hertig, W. L. Hull, B. G. Jones, H. H. Korst, J. L. Leach, F. A. Leckie, F. A. Morrison, L. C. Pigage, S. L. Soo, W. F. Stoecker, J. J. Stukel, R. A. White, S. M. Yen
Associate Professors: A. M. Clausing, T. F. Conry, J. M. Crowley, C. Cusano, M. I. Dessouky, R. E. DeVor, J. E. Greene, R. E. Klein, C. S. Larson, J. S. Liebman, R. Nehrabain, D. H. Offner, C. O. Pedersen, W. B. Rouse, L. D. Savage, L. H. Sentman, S. C. Sorenson, J. L. Whisenand
Assistant Professors: D. G. Backman, M. J. Binder, R. O. Buckius, W. J. Davis, W. E. Dunn, N. R. Miller, M. M. Tseng, J. A. Voelker

Graduate Degree Programs. The Department of Mechanical and Industrial Engineering offers work leading to the Master of Science in Mechanical Engineering, the Master of Science in Industrial Engineering, and the Doctor of Philosophy in Mechanical Engineering. In mechanical engineering, a student may specialize in any of the core

areas including thermodynamics, heat transfer, fluid dynamics, multiphase systems, combustion, internal combustion engines, thermal systems including environmental control in buildings, environmental engineering and air pollution controls, kinematics and dynamics of machinery, friction, lubrication and wear, control systems, man-machine systems, materials processing including solidification, powder metallurgy, and metal matrix composites, and bioengineering. Through these areas, the department has a strong commitment to energy-related research programs. In industrial engineering a student may specialize in any of the several areas in manufacturing systems and operations research, including production control and quality control, facilities planning and design, human factors, mathematical programming, simulation, project management, and production process design.

Admission. Based upon the previous preparation of the student, one or more prerequisite courses may be specified by the adviser, but the credit may not apply to the degree. For example, those without experience in digital computers may be required to demonstrate proficiency in this area.

Master of Science. A thesis is required, but can be waived for students terminating their studies with the M.S. degree. A total of 8 units (including thesis credits) is required. A full-time student can complete this program in an academic year. Those not writing a thesis are required to offer a minimum of 9 units of credit. In such cases, the study program includes one or more units of laboratory investigations, since each student is required to show evidence of ability to do independent study.

Doctor of Philosophy. A master's thesis or equivalent is required of all applicants for Ph.D. study. Those students who enter with a master's degree and who have not written a thesis or the equivalent will be required to register in laboratory investigations during their first semester of residence on the UIUC campus for the purpose of demonstrating their ability to do independent research. Qualifying examinations are to be taken during the semester in which the ninth unit of graduate credit is earned, at the earliest, but no later than the first semester thereafter. A total of 16 units of course work beyond the B.S. degree is a minimum course requirement for the Ph.D. degree. The minimum total requirement for the Ph.D. is 24 units, including thesis research credit. In order to be considered for acceptance as a final doctoral candidate, the student must prepare a thesis proposal and take an oral preliminary examination. If successful, the candidate completes the thesis work and takes a final oral examination.

METALLURGY AND MINING ENGINEERING

Head of the Department: C. A. Wert

Correspondence and Information: Head of the Department, Department of Metallurgy and Mining Engineering, University of Illinois at Urbana-Champaign, 201 Metallurgy and Mining Building, Urbana, Illinois 61801

FACULTY

Professors: C. J. Altstetter, P. A. Beck (emeritus), H. K. Birnbaum, R. W. Bohl, A. J. deWitte, G. Ehrlich, F. V. Lawrence, D. S. Lieberman, M. Metzger, E. N. Pugh, T. J. Rowland, J. A. Simon, C. M. Wayman, C. A. Wert

Associate Professors: J. E. Greene, R. Mehrabian

Graduate Degree Programs. The Department of Metallurgy and Mining Engineering offers graduate work leading to the Master of Science and Doctor of Philosophy in Metallurgical Engineering. The faculty members have a widely varied background of engineering and science, and graduates go into a broad range of industrial, government, and university positions. Close association exists with staff members in other departments having programs in the properties of solids.

Admission. Graduate students in metallurgical or mining engineering may have undergraduate degrees in a number of disciplines. Graduates with degrees in metal-

lurgy or mining engineering fit into the graduate programs easily, as well as the many graduate students who come from other engineering or science disciplines. Graduates of departments of mechanical engineering, physics, chemistry, and ceramics are represented among our student body.

Master of Science. A candidate for the Master of Science is required to have a minimum of 8 units of graduate work, including a thesis. If a petition to waive the thesis is granted, a minimum of 9 units of graduate work is required. A thesis is required of candidates who hold research assistantships.

Doctor of Philosophy. Students desiring to work for the Doctor of Philosophy are required to pass the departmental qualifying examination. This oral examination must be taken no later than the end of the first semester after receiving the Master of Science from this department, or after completing an equivalent amount of graduate work.

The minor requirement of the department for the Doctor of Philosophy may be satisfied by taking courses in fields such as ceramics, chemistry, geology, mathematics, theoretical and applied mechanics, nuclear engineering, and physics. Although reading knowledge of a foreign language is helpful, there is no formal requirement.

MUSIC

(Including Music Education and Musicology)

Director of the School of Music: Robert E. Bays
Correspondence and Information: Office of Graduate Studies, School of Music, University of Illinois at Urbana-Champaign, 2136 Music Building, Urbana, Illinois 61801

FACULTY

Professors: J. Bailey, R. Bays, H. Begian, E. S. Berry, H. Brun, A. M. Carter, W. Coggins, R. Colwell, H. Decker, K. Drake, G. Duker, B. Edlefsen, M. Elyn, T. Fredrickson, J. Garvey, R. Gray, D. Gunsalus, L. Gushee, J. Hamilton, T. Holden, G. Hunter, B. Johnston, E. Krolick, C. Leonhard, D. Lloyd, J. Lyke, E. London, A. McDowell, G. Magyar, S. Martirano, A. Murray, B. Nettl, G. Perich, C. Richards, A. Ringer, P. Rolland, D. Sanders, H. Schmitt, R. Smith, S. Stravinsky, R. Swenson, N. Temperley, R. Thomas, W. Warfield, G. Wilson, T. Wisniewski, J. Wustman

Associate Professors: J. Beauchamp, F. Crawford, E. Dalheim, N. DiVirgilio,W. Heiles, M. Hoffman, A. Johnson, H. Kellman, D. Kimpton, D. Kohut, D. Miller, J. O'Connor, W. Olson, D. Perantoni, M. Powell, R. Ray, Jr., J. Shapiro, T. Siwe, P. Vermel, L. Waa, T. Ward, P. Zonn

Assistant Professors: A. Blatter, A. Caramia, F. Fairchild, V. Farmer, B. Gunther, M. Gushee, D. Hickman, T. Kalam, J. Melby, Jr., J. Pummill, R. Sasaki, L. Rumery, S. Wyatt, S. Blankenship

Graduate Degree Programs. The School of Music offers graduate study leading to the Master of Music, Doctor of Musical Arts, Doctor of Philosophy in Musicology, Master of Science in Music Education, Doctor of Education in Music Education, and the Advanced Certificate in Music Education. Complete details of these programs may be found in the school's brochure on graduate study in music.

RESEARCH AND PROFESSIONAL CURRICULA

Master of Music. The fields of specialization for the M.Mus. degree are musicology; music theory; composition; performance and literature (piano, organ, voice, orchestral instruments); choral music; and vocal accompanying and coaching.

Admission. Requirements for admission are a Bachelor of Music degree from the University of Illinois, or an equivalent degree from another accredited institution

(students holding other degrees may be admitted, but will be expected to make up any deficiencies). Those majoring in musicology are generally expected to have a minimum grade-point average of 4.25. (A = 5.0). Applicants in performance and literature must pass a qualifying audition before their major division or submit satisfactory recordings. Applicants in musicology, theory, or composition must present writings or other evidence of their ability to pursue work at the graduate level.

Language Requirements. Applicants in voice are required to have had one year each at the college level, or two years at the high school level, of French, German, and Italian. Applicants in other applied music areas and in theory-composition are required to have had one year of any language at the college level. Applicants in musicology must give evidence of a reading knowledge of French or German. Students otherwise admissible may satisfy any language deficiencies concurrently with graduate studies.

Entrance Examinations. All prospective candidates for the M.Mus. degree must pass entrance examinations in music history and theory. These examinations must be taken immediately prior to the student's first registration.

Degree Requirements. Candidates for the M.Mus. in theory-composition and in performance and literature must earn at least 8 units, including 2 units at the 400 level in their major field, and 1 unit in problems and methods. Candidates in performance and literature must earn 2 units in the music literature course in their major applied area. Candidates in musicology must earn 2 units in introduction to musicology, 2 units in the seminar in musicology, and ½ unit in notation. Electives in music theory, history, and literature, and other music and nonmusic courses will be chosen in consultation with the candidate's graduate adviser. A graduate recital is required of all candidates in performance and literature. However, the recital required of voice majors may, by collective action of the voice division, be waived. Candidates in musicology and theory must write a thesis, for which 2 units of credit are given. Candidates in composition must present a portfolio of their works for approval by the composition faculty.

Doctor of Musical Arts. The fields of specialization for the D.M.A. degree are composition, piano, organ, choral music, voice, violin, viola, cello, wind instruments, and percussion instruments.

Admission. Prerequisites for admission are: (1) The M.Mus. degree from the University of Illinois, or an equivalent degree from another accredited institution, with a major in one of the areas of specialization listed above. (2) A high level of proficiency in composition or performance. Candidates in composition must submit original scores for review. Candidates in performance and literature must pass a qualifying audition or submit satisfactory recordings. (3) Appropriate experience in ensemble playing and/or score reading. (4) The successful completion of approximately 32 semester hours (or the demonstration of an equivalent background) in the liberal arts and sciences, including a minimum of 6 hours in history and 6 hours in literature and philosophy. Candidates in voice must have fulfilled all foreign language requirements considered prerequisites for the M.Mus. (5) The successful completion of entrance examinations in music history and theory for the M.Mus.

Degree Requirements. Candidates must earn a minimum of 16 units beyond the requirements for the master's degree. The program is worked out in consultation with the student's graduate adviser in terms of special needs, interests, and abilities; it will ordinarily include a minimum of 3 units in the major field of specialization, 2 units in advanced music literature courses, and 2 units in a minor field. A preliminary examination is taken once all course work is completed.

Language Requirements. All candidates will be required to demonstrate proficiency in at least one language other than English. Each division may specify which language is required or may require proficiency in more than one language. Language requirements can be satisfied by evidence of two years of undergraduate study, by successful completion of a two-semester 400-level reading course, or by satisfactory test scores.

Doctoral Project and Thesis. In the fields of composition and of performance and literature 6 units are devoted to a special doctoral project. Composers must produce a

large-scale original score. Performers must demonstrate comprehensive repertory study in the form of two solo recitals, or one solo recital and two of the following options: a concerto; a major operatic or oratorio role; a chamber music program; a lecture-recital; or the preparation of and, when appropriate, conducting of a concert by an instrumental or vocal ensemble. In addition, both fields have a research requirement that serves in lieu of a thesis. In the field of choral music, 1 unit is given for the preparation and presentation of a one-hour program representative of a comprehensive repertory, and 4 units are devoted to the writing of a thesis.

Doctor of Philosophy in Musicology. The Ph.D. in musicology is intended for those whose interests lie in research in the history of music, systematic musicology, or ethnomusicology.

Admission. Prerequisites for admission are: (1) The M.Mus. in musicology from the University of Illinois, or an equivalent degree from another accredited institution. (2) A minimum of 32 semester hours in the liberal arts and sciences, normally including general history, philosophy, and literature. (3) The successful completion of entrance examinations in music history and theory for the M.Mus.

Degree Requirements. A minimum of 16 units must be earned beyond the requirements for the master's degree, including at least 2 units in the seminar in musicology and ½ unit in notation. Although no formal outside minor is required, students are expected to take courses in fields outside music that are appropriate to the proposed area of dissertation research. A preliminary examination is taken once all course work is completed.

Language Requirements. Proficiency is required in German and at least one other language, depending on the proposed field of specialization. This requirement can be satisfied by evidence of two years of undergraduate study, by completion of a two-semester 400-level reading course with a grade of at least B, or by satisfactory test scores.

Thesis. Eight of the total of 16 units are normally devoted to the writing of an original doctoral thesis.

MUSIC EDUCATION CURRICULA

Master of Science in Music Education. An applicant for admission must hold a bachelor's degree in music education with an admission average of at least 4.0. Candidates for this degree must earn a minimum of 4 units in music courses, 2 units in education courses, and 2 units of electives. One of the 4 units in music courses must be in music education. All students pursuing this degree must complete placement examinations in music history and theory and in the major performing medium during the registration period of their first session in residence. A thesis is not required. A full-time student can complete this program in one academic year or four summer sessions. The residence requirement may be fulfilled by one semester and one summer or by three summers of full-time study.

An alternate program for Bachelor of Music graduates requires 4 units in music courses, 1 unit in educational psychology, 1 unit in educational policy studies, 2 units of electives, and 9 hours of undergraduate professional education, including 6 hours in student teaching. Enrollment in a summer session contiguous to the year of residence is required.

Advanced Certificate in Music Education. This program, designed to provide advanced professional preparation for music educators, requires a minimum of one year of graduate study beyond the master's degree.

Admission. A candidate for admission must hold a master's degree in music or music education and must have completed satisfactorily two years of professional employment in music education. At first registration, placement examinations are administered in music history, music theory, and applied music.

Program. A minimum of 8 units beyond the master's degree is required, including 1 unit in music education courses and 1 unit in educational psychology. Students not holding a valid teaching certificate in music must fulfill certification requirements of the state in which they are employed.

Doctor of Education in Music Education. This program, offered jointly by the School of Music and the College of Education, is designed to develop leaders in music education with a high level of musical, intellectual, and professional competence.

Admission. An applicant for admission must hold a master's degree with a major in music or music education. Admission is determined by examinations in music history, music theory, music education, and applied music; personal interviews; record of previous education and experience; and recommendations from persons who have known the applicant. A report of the applicant's score on the Miller Analogies Test should accompany his or her application for admission.

Program. At least 16 units of work beyond the master's degree are required, including 6 units in music courses and 6 units in education courses. No more than 2 units of credit in applied music may be counted toward the degree. A thesis is required. It may be in the area of improving professional practice and may be a field study. The residence requirement may be fulfilled by full-time study in two consecutive semesters or in one semester, a contiguous summer session, and one additional summer session.

Financial Aid. Fellowships, teaching or research assistantships, and tuition and service fee waivers are awarded on a one-year basis, with continuation dependent upon success in the program. Specific information on application procedures is available from the Graduate Office, School of Music.

NUCLEAR ENGINEERING

Chairperson of the Program: George H. Miley
Associate Chairperson: Arthur B. Chilton
Correspondence and Information: Nuclear Engineering Program, University of Illinios at Urbana-Champaign, 214 Nuclear Engineering Laboratory, Urbana, Illinois 61801

FACULTY

Professors: F. T. Adler, R. A. Axford, R. W. Bohl, A. P. Boresi, B. T. Chao, B. E. Cherrington, A. B. Chilton, G. A. Costello, J. J. Dorning, H. S. Ducoff, B. B. Ewing, D. F. Hang, T. J. Hanratty, C. D. Hendricks, B. G. Jones, J. S. Koehler, R. J. Martin, G. H. Miley, R. J. Turnbull, J. T. Verdeyen, B. W. Wehring
Associate Professor: H. Merkelo
Assistant Professors: J. J. Carbajo, G. A. Gerdin, P. K. Hopke, K. Kim, D. J. Leverenz, A. J. Machiels, R. S. May, R. P. Roy

Graduate Degree Programs. The Nuclear Engineering Program offers work leading to the Master of Science and Doctor of Philosophy degrees.

Admission. Admission to the M.S. and Ph.D. programs is open to all graduates in engineering, mathematics, and the physical sciences with an average grade of B or better for the last 60 hours of undergraduate work and any graduate work completed. Prerequisites for admission include a course in ordinary differential equations plus one other mathematics course beyond calculus; a course in atomic physics; a course in electrical circuit theory; a course in thermodynamics; and a course in fluid mechanics or a course in continuum mechanics. A student may be admitted before completion of these prerequisites, but he or she must allow additional time for making up these deficiencies and such make-ups will not count toward the number of units required for the degree. Transcripts will be reviewed prior to admission, and letters of recommendation are requested plus other information such as rank in class as an undergraduate. If necessary to limit enrollments, admission will be restricted to those judged most worthy. International students must show good proficiency in English or be required to take courses in English as a second language.

Master of Science. The M.S. degree can usually be completed in two semesters and a summer session. Eight units of graduate work are required, including an M.S. thesis.

The curriculum requires courses covering the fundamentals of nuclear engineering, plus two or more courses in an area of concentration chosen by the student in consultation with his or her adviser. Such areas include: nuclear materials, fusion systems and plasma engineering, energy conversion, radiation protection engineering, reactor physics and radiation transport, reactor thermal analysis and design, and reactor safety and nuclear power economics. At least six of the courses taken must be in the nuclear engineering area.

Doctor of Philosophy. Course requirements for the Ph.D. degree include at least two more semesters beyond that required for the M.S. degree. After this period, one or more years may be needed for the doctoral research and thesis. Students desiring to work toward the Ph.D. degree must pass the qualifying examination after receiving the M.S. degree (or after completing an equivalent number of units if not taking the M.S. degree). After completion of the additional course work, the candidate must pass the preliminary doctoral examination. After completion of the doctoral thesis, he or she must defend it successfully at the time of the final examination. The formal course work is a minimum of 16 units, excluding the Ph.D. thesis. A doctoral student would typically complete about twelve courses in nuclear engineering, several courses in mathematics, and about four courses in a minor discipline. There is no foreign language requirement. Under exceptional circumstances, the doctoral research may be undertaken off campus.

Financial Aid. Fellowships and traineeships are generally available to support the best applicants, usually for periods of a year. Other aid in the form of research assistantships and teaching assistantships is available for many if not most of the other graduate students. Other work of a professional nature can sometimes be found in the University or surrounding community. If the number of students is more than the program can assist financially, the support is distributed according to academic merit.

Research Interests. Faculty research interests cover a wide range, including but not limited to reactor physics and engineering, radiation measurements, fusion and plasmas, nuclear thermal-hydraulics, nuclear safety, nuclear bioengineering, radiation transport phenomena, nuclear materials, and neutron activation.

Facilities. The Illinois Advanced TRIGA reactor is located on campus for research and teaching in nuclear engineering and operates at a steady state of power of 1.5 megawatts. The reactor can be pulsed to lower levels of 6,000 megawatts for special studies. Teaching facilities include a nuclear metallurgy laboratory; a radiochemistry and nuclear instrumentation laboratory; a heat transfer, fluid flow, and turbulence laboratory; several subcritical natural uranium assemblies; two neutron generators; a direct energy conversion laboratory; and a fusion studies laboratory.

NUTRITIONAL SCIENCES

Chairperson of the Committee on Nutritional Sciences: A. J. Siedler
Correspondence and Information: Nutritional Sciences Program, University of Illinois at Urbana-Champaign, 567 Bevier Hall, Urbana, Illinois 61801

FACULTY

Professors: D. H. Baker, C. L. Davis, R. M. Forbes, K. E. Harshbarger, B. E. Haskell, F. A. Kummerow, B. L. Larson, S. P. Mistry, T. Nishida, E. G. Perkins, A. J. Siedler, W. J. Visek
Associate Professors: D. E. Bauman, J. H. Clark, P. V. Johnston, J. L. Robinson
Assistant Professors: J. W. Erdman, Jr., J. A. Milner, M. F. Picciano

Graduate Degree Programs. An interdepartmental graduate training program leading to the Master of Science and Doctor of Philosophy in Nutritional Sciences degrees is offered under the auspices of the University Committee on Nutritional Sciences. The

degree requirements are designed to provide sufficient flexibility to enable students to pursue study in one of several areas of specialization within the broad field of the nutritional sciences. These specialties include experimental nutrition as it applies to microbes, animals, and man; nutritional biochemistry; and the chemistry of nutritional compounds. The program does not provide training in dietetics and community health.

Admission. Applicants are expected to have sound basic courses in nutrition, chemistry, biology, and mathematics. Deficiencies in these subjects must be removed during the first year of graduate study. The Graduate College admissions requirements apply.

Master of Science. Requirements for the M.S. include courses in general biochemistry, two courses in advanced nutrition, and one semester of seminar. Additional courses are available in such diverse subjects as laboratory techniques in animal biochemistry, instrumental analysis, foods and nutrition, lipid metabolism, nutritional biochemistry, human and animal nutrition, food science, anthropology, sociology, and agricultural economics. The M.S. may be taken with or without a thesis. The minimum course work requirements for the M.S. are 8 units (nonthesis) and 6 units (plus at least 2 units of thesis credit).

Doctor of Philosophy. In addition to maintaining a satisfactory average of 4.0 (A = 5.0) in formal course work, Ph.D. students are required to pass a qualifying examination, an oral preliminary examination, and a final thesis examination. There is no foreign language requirement, but students whose native language is not English are required to have a competence in English.

PHILOSOPHY

Chairperson of the Department: W. P. Alston
Correspondence and Information: Director of Graduate Studies, Department of Philosophy, University of Illinois at Urbana-Champaign, 105 Gregory Hall, Urbana, Illinois 61801

FACULTY

Professors: W. P. Alston, C. E. Caton, B. J. Diggs, D. S. Shwayder, H. M. Tiebout, J. D. Wallace
Associate Professors: H. S. Chandler, A. Melnick, W. Neely, R. L. Schacht
Assistant Professors: D. A. Bantz, R. Fern, R. Monk, S. Wagner, R. Wengert

Graduate Degree Programs. The normal program of graduate study for philosophy majors is directed toward the Doctor of Philosophy, but a limited number of students who wish to work for the Master of Arts are admitted. Graduate students majoring in other fields who wish to offer philosophy as a minor, or to include philosophy in their programs in a less formal way, are encouraged to consult with members of the graduate faculty in philosophy in order to plan appropriate courses of study.

Admission. The Graduate College admissions requirements apply. In addition, applicants should have had a course in elementary logic, a course in the theory of knowledge, a course in ethics, and a general course in the history of philosophy (the main figures of ancient and modern philosophy). Students deficient in one or more of these areas may be admitted, with deficiencies to be removed by taking courses recommended by the departmental director of graduate studies after consultation with the student.

All applications for admission must be supported by three letters of recommendation. The letters should be in each case from persons qualified to speak of the candidate's aptitude for graduate study in philosophy. Candidates are asked to have these letters transmitted directly to the Committee on Admissions and Financial Aid of the Department of Philosophy. All applicants for admission are required to take the general aptitude portion of the Graduate Record Examination and to have their scores transmitted to the department.

Master of Arts. The A.M. degree requires at least 8 units of graduate credit with at least a 4.0 grade-point average (A = 5.0). There are two ways in which this degree may be earned. A student who has passed the preliminary examination for the Ph.D. automatically meets the department's requirements for the A.M. The degree may also be earned by completing one full year of residence study in philosophy at the University of Illinois at Urbana-Champaign, for a minimum of 8 units (at least 6 of the 8 units must be in course work), submitting a substantial essay, and passing an oral examination on the essay given by a committee appointed by the chairperson of the department. A degree earned in this second way is normally a terminal one.

Doctor of Philosophy. The Ph.D. degree requires 16 units of graduate credit beyond the 8 required for the master's degree. Eight of these may be thesis research credit. A minimum grade-point average of 4.0 is required for this degree.

In the preliminary examination, required of all candidates, each student is required to demonstrate a basic competence in the following four broad areas of philosophy: history of philosophy, theory of knowledge, metaphysics, and ethics and value theory.

Candidates are not generally required to take work in a minor field outside the department. However, in those cases where advanced study in philosophy would be strengthened by study in a related field, the student may be advised to include such work in the courses taken to satisfy the requirements for the degree. Such study is limited to 2 units, unless the student wishes the work to count as an extradepartmental minor. Then the minimum work accepted is 2 units, the maximum 4.

Before the Department of Philosophy will certify that a student has passed the preliminary examination, the student must demonstrate a basic reading knowledge of French and German (deviations from this policy require the approval of the chairperson of the department) and demonstrate a basic competence in mathematical logic. The logic requirement may be met by passing an approved course in the subject or by passing a proficiency examination administered by the department.

After passing the preliminary examination, the student must submit an acceptable dissertation and pass a final examination on the dissertation. The acceptability of the dissertation is judged, and the final examination administered, by the student's doctoral committee.

Concentration in the Area of History and Philosophy of Science. The Departments of History and Philosophy jointly offer, for work toward the A.M. and Ph.D. degrees, a special area of concentration in history and philosophy of science. Students interested in this program will enroll in, and receive their degrees from, either department, depending on the focus of their interests. Undergraduate background requirements for admission to the program are flexible; although an undergraduate concentration in either history or philosophy is normally desirable, so also is a strong background in science, and students with such background, but only weak training in history or philosophy, will be considered for admission. The course requirements for admission to the Department of Philosophy and the means of remedying deficiencies in undergraduate training, as stated above, are not applicable to students applying to this program. The other admission requirements are the same as those stated for each of the two departments, as is the information to be submitted with each application for admission. The exact requirements for degrees in this concentration, including the preliminary examination, are somewhat different from and more flexible than those for the advanced degrees in philosophy. Further information is available from the Department of Philosophy.

Financial Aid. Financial aid is available for a limited number of students in the form of fellowships, assistantships, and waivers of tuition and service fees.

PHYSICAL EDUCATION

Head of the Department: Rollin G. Wright

Correspondence and Information: Rollin G. Wright, Graduate Program Office, Department of Physical Education, University of Illinois at Urbana-Champaign, 129 Freer Gymnasium, Urbana, Illinois 61801

FACULTY

Professors: A. T. Cheska, G. Lueschen, B. H. Massey, D. O. Matthews, A. C. Moore, R. Martens, M. Thompson, R. G. Wright

Associate Professors: R. A. Boileau, C. J. Dillman, P. Hill, A. Hoyman, R. Keller, T. Lohman, J. Misner, G. Roberts, M. Souder, M. Trekell, O. Young

Assistant Professors: D. E. Arnold, H. Deutsch, K. Fry, S. Greendorfer, J. Lewko, M. Loovis, K. Milner, K. Newell, M. Slaughter, J. Teeple, M. Taylor, T. Ward, B. Williams

Graduate Degree Programs. The Department of Physical Education offers graduate work leading to the degrees of Master of Science in the Teaching of Physical Education, Master of Science, and Doctor of Philosophy. Each of these is an individualized program of graduate study designed to develop outstanding educators, scholars, and researchers in physical education.

Master of Science in the Teaching of Physical Education. Admission to this degree program requires a baccalaureate degree from an accredited institution of higher education, a minimum grade-point average of 4.0 (A = 5.0) for the last 60 hours of undergraduate work and any graduate work completed, eligibility for teacher certification in the state of Illinois, acceptable scores on the Miller Analogies Test and/or the aptitude portion of the Graduate Record Examination, and three letters of recommendation. This degree program is designed for individuals who wish to advance their teaching competencies. Candidates for this degree must complete a minimum of 8 units, 4 of which must be in physical education and 2 in education courses. Three of the total units must be in 400-level courses. Of the 4 units in physical education, Physical Education 495, Techniques of Research, and Physical Education 490, Seminar, are required. Information concerning the specific requirements of the 2 units in education may be obtained from the graduate studies office of the department. At least one-half of the minimum units required for this degree must be in courses meeting on the Urbana-Champaign campus. It is possible for a full-time student to complete this degree program in one academic year plus one summer session. A thesis is not required.

Master of Science. Admission to this degree program requires a baccalaureate degree from an accredited institution of higher education, a minimum grade-point average of 4.0 for the last 60 hours of undergraduate work and any graduate work completed, acceptable scores on the Miller Analogies Test and/or the aptitude portion of the Graduate Record Examination, and three letters of recommendation. This degree program emphasizes research and is designed for those individuals desiring to study a particular area of interest in depth. Candidates for this degree must complete a minimum of 8 units, 4 of which must be in physical education courses and 2 in a discipline other than physical education. Three of the total units must be in 400-level courses. Of the 4 units in physical education, Physical Education 495, Techniques of Research in Physical Education, and Physical Education 490, Seminar, are required. At least one-half of the minimum units must be in courses meeting on the Urbana-Champaign campus. It is possible for a full-time student to complete this degree program in one academic year plus one summer session. A thesis is required.

Doctor of Philosophy. Admission to this degree program requires a master's degree from an accredited institution of higher education, completion of a thesis or equivalent research experience, a minimum grade-point average of 4.5 for all graduate work, acceptable scores on the Miller Analogies Test and aptitude portion of the Graduate Record Examination, and three letters of recommendation. Doctor of Philosophy degree candidates pursue an advanced program of study and research in preparation for careers in scholarly research and teaching. Candidates must complete a minimum of 16 units of work beyond the master's degree, to include 4 units in another discipline and 8 units of dissertation research. Ph.D. candidates must demon-

strate the ability to translate two foreign languages, or to read, write, and converse satisfactorily in one foreign language. With departmental approval, 2 additional units of approved graduate course work may be substituted for each of the two required foreign languages. Ph.D. candidates must also successfully complete the preliminary and final doctoral examinations.

Financial Aid. A number of teaching assistantships is available in the department's instructional programs; priority is given to applicants with professional teaching experience. A limited number of research assistantships is available to support the departmental research laboratories. All assistantships provide a stipend for services performed, as well as a waiver of tuition and service fees.

Research Interests. Major areas of faculty research interest include the primary bioscientific, socioscientific, and educational aspects of the field with concentrations in biomechanics, motor learning and development, physiology of activity, psychology of sport, program development (curricula, adapted programming, and exercise therapy), and sociology of sport.

Research Facilities. In support of its graduate programs and research efforts, the Department of Physical Education maintains research facilities, including the Biomechanics Research Laboratory, the Motor Behavior Research Laboratory, the Motor Learning and Development Laboratory, and the Physical Fitness Research Laboratory.

PHYSICS

Head of the Department: R. O. Simmons

Correspondence and Information: Graduate Advising Office, Department of Physics, University of Illinois at Urbana-Champaign, 211 Loomis Laboratory of Physics, Urbana, Illinois 61801

FACULTY

Professors: F. T. Adler, D. Alpert, A. C. Anderson, G. Ascoli, P. Axel, G. A. Baym, S. A. Bowhill, F. C. Brown, R. M. Brown, M. K. Brussel, S.-J. Chang, P. G. DeBrunner, J. D. Dow, H. G. Drickamer, G. Ehrlich, C. P. Flynn, H. Frauenfelder, D. M. Ginsberg, A. V. Granato, P. Handler, A. O. Hanson, L. E. Holloway, N. Holonyak, J. P. Hummel, I. Iben, E. A. Jackson, M. V. Klein, J. S. Koehler, L. J. Koester, U. E. Kruse, A. B. Kunz, L. S. Lavatelli, D. Lazarus, D. E. Mapother, R. J. Maurer, W. L. McMillan, Y. Ogura, T. A. O'Halloran, V. R. Pandharipande, C. J. Pethick, D. Pines, F. M. Propst, M. J. Raether, D. G. Ravenhall, C. T. Sah, M. B. Salamon, R. D. Sard, C. B. Satterthwaite, R. O. Simmons, C. P. Slichter, J. H. Smith, J. N. Snyder, H. J. Stapleton, J. D. Sullivan, J. W. Truran, W. D. Watson, A. Wattenberg, W. S. Williams, M. Wortis, J. A. Wright, H. W. Wyld

Associate Professors: J. H. Cahn, P. T. Debevec, B. I. Eisenstein, G. E. Gladding, L. M. Jones, D. Q. Lamb, F. K. Lamb, M.-K. Mak, J. M. Mochel, R. L. Schult, B. A. Sherwood, J. D. Stack, D. C. Sutton

Assistant Professors: M. Altarelli, L. S. Cardman, A. M. Nathan, J. J. Thaler, J. P. Wolfe

Graduate Degree Programs. The Department of Physics offers graduate work leading to the Master of Science, the Doctor of Philosophy, and the Master of Science in the Teaching of Physics. There is opportunity for experimental or theoretical specialization in nuclear physics; elementary particle physics; nuclear magnetic and electron spin resonance; astrophysics; the physics of solids, including research on ionic crystals, metals, semiconductors, superconductors, biomolecular, and surface physics; the properties of liquid helium; and plasma physics. Graduate study in atmospheric physics, aeronomy, and in several areas of applied physics is available in conjunction with other departments in the University.

Admission. Requirements for admission to the graduate program in physics, in addition to those of the Graduate College, are 20 hours of physics excluding courses in general physics and including a semester of intermediate theoretical mechanics, and two semesters of intermediate electricity and magnetism or the equivalent. Advanced undergraduate courses in light, thermodynamics, and atomic and quantum physics, and undergraduate study of a foreign language are strongly recommended. Students whose undergraduate training in physics is deficient in one or more basic areas are often admitted on limited standing with deficiencies to be removed during the first year of graduate study.

Master of Science and Master of Science in the Teaching of Physics. These programs require 8 units of graduate courses, and are usually completed in one year of full-time study by students entering on full standing. Students entering with deficiencies may require up to two years to complete the degree requirements. Precise statements of degree requirements may be obtained from the Graduate Advising Office of the Department of Physics.

Doctor of Philosophy. Students working for the Ph.D. usually require from four to six years to complete the requirements. Students admitted with full standing are expected to pass the qualifying examinations within the first eighteen months of residence and the preliminary examinations within the following eighteen months. Departmental requirements for the Doctor of Philosophy, in addition to the general requirements of the Graduate College, are described in a pamphlet which may be obtained from the Graduate Advising Office of the Department of Physics.

Related Programs. For information concerning applications of mathematics to the physical sciences, see page 125; for information concerning astronomy, see page 64; for information concerning atmospheric sciences, see page 65; for information concerning biophysics, see page 123; for information concerning geophysics, see page 99. A doctoral program in chemical physics is described on page 69.

PHYSICAL SCIENCES

Correspondence and Information: Professor D. H. Secrest, University of Illinois at Urbana-Champaign, 155 Noyes Laboratory, Urbana, Illinois 61801

Graduate Degree Programs. Two degree programs in physical sciences, one leading to the Master of Science and the other leading to the Master of Science in the Teaching of Physical Sciences, are offered for active or potential secondary school teachers. In both programs, the requirements for teacher certification must be met. A thesis is optional. No more than 2 units of thesis credit may be applied toward degree requirements. There is no language requirement.

Master of Science. This program is designed to meet the needs of teachers who wish to get a broad view of the physical sciences rather than to specialize in one department. Since the program is designed primarily for those preparing to teach the physical sciences, chemistry and physics are emphasized. Students working toward degrees under the provisions of this program are expected to seek approximately equal proficiency in both physics and chemistry; those whose undergraduate work has emphasized chemistry should balance this by weighting the graduate work in favor of physics, and vice versa.

All courses in astronomy, chemistry, computer science, geology, mathematics, and physics which normally may be applied for graduate credit are acceptable toward the degree. To qualify for the degree, a student must present at least one course in mathematics beyond calculus for which calculus is a prerequisite.

Master of Science in the Teaching of the Physical Sciences. Students in this program must earn 4 units in the physical sciences, 2 units in education (see page 84), and 2 units of electives in education or physical science, or in exceptional cases in other fields.

PLANT PATHOLOGY

Head of the Department: RICHARD E. FORD
Correspondence and Information: Head of the Department of Plant Pathology, University of Illinois at Urbana-Champaign, 214 Turner Hall, Urbana, Illinois 61801

FACULTY

Professors: R. E. FORD, J. W. GERDEMANN, D. GOTTLIEB, E. B. HIMELICK, A. L. HOOKER, R. D. NEELY, P. D. SHAW, M. C. SHURTLEFF, J. B. SINCLAIR
Associate Professors: D. I. EDWARDS, L. E. GRAY, R. B. MALEK, J. D. PAXTON, D. F. SCHOENEWEISS
Assistant Professors: R. M. GOODMAN, B. J. JACOBSEN, E. G. JORDAN, H. JEDLINSKI, S. M. LIM, S. M. RIES, D. G. WHITE

Graduate Degree Programs. The Department of Plant Pathology offers a full complement of courses and study leading to the Master of Science and Doctor of Philosophy degrees. All students are required to present themselves for an oral examination in plant pathology before their program of study committee after the first semester of graduate study.

Training consists of a flexible program of courses and research in plant pathology and allied sciences. Areas of specialization are diseases of field, fruit, vegetable, turf, tree, or ornamental crops; virology; nematology; mycology; phytobacteriology; fungicides; antibiotics; physiology of fungi; biochemistry of plant diseases; disease resistance; etiology; epiphytology; soil-borne diseases; and variability in plant pathogens.

Admission. Applicants for graduate study are screened by a departmental admissions committee. The Graduate College admissions requirements apply.

Master of Science. A candidate for the Master of Science must complete 8 units of credit, including the presentation of an acceptable thesis, and pass an oral examination. Credit in equivalent courses earned at other institutions may be accepted at the discretion of the department head and the student's program of study committee. The candidate must maintain an average of 4.0 (A = 5.0) for the master's program.

Doctor of Philosophy. Students working toward the Ph.D. usually require three to five additional years beyond the master's. Eight units of course work, including required courses, must be completed beyond the master's to qualify for the preliminary examination. An oral preliminary examination before five faculty members, including three from the department and two from outside the department, is required. A final examination by the same committee follows the presentation of an acceptable dissertation. A grade-point average of at least 4.0 is required for the Ph.D. Although teaching is not a general Graduate College requirement, this department requires Ph.D. candidates to do some teaching as part of their academic work, such experience being considered a vital part of the graduate program.

POLITICAL SCIENCE

Acting Head of the Department: MARVIN G. WEINBAUM
Correspondence and Information: Department of Political Science, University of Illinois at Urbana-Champaign, 361 Lincoln Hall, Urbana, Illinois 61801

FACULTY

Professors: M. DAVIS, B. GLAD, S. K. GOVE, E. A. KOLODZIEJ, R. L. MERRITT, P. MONYPENNY, S. S. NAGEL, R. E. SCOTT, L. SELIGMAN, F. WIRT, G. T. YU
Associate Professors: P. G. BOCK, I. H. CARMEN. B. CARROLL, S. P. COHEN, S. A. DOUGLAS, A. B. FIELDS, M. HOBBS, R. E. KANET, G. ORFIELD, M. G. WEINBAUM, M. E. WEINSTEIN, R. WEISSBERG
Assistant Professors: S. HANSEN, D. E. MCHENRY, P. F. NARDULLI, M. PRESTON, R. ROTHMAN, H. T. SANDERS, S. SEITZ

Graduate Degree Programs. The Department of Political Science offers graduate work leading to the degrees of Master of Arts and Doctor of Philosophy. Graduate work is conducted in the following special fields: American government and politics, comparative government and politics, international law and relations, political behavior, and political theory.

Admission. The student must have had a minimum of 20 hours of undergraduate work in political science, economics, finance, psychology, sociology, or history, not less than 12 hours of which must have been in political science, which may include 3 hours in constitutional history.

Master of Arts. Requirements for the master's degree include 8 units of credit and an acceptable thesis or substantial research essay in a departmental course.

Master of Arts in Public Administration. Requirements for the M.A.P.A. include 9 units of course work and an acceptable thesis. This program is matched to the individual needs and objectives of students. Programs for students without public service employment usually incorporate an internship of at least three months.

Doctor of Philosophy. Students planning to continue toward the doctorate must be admitted to candidacy. Such students should apply for admission to candidacy in their fourth semester of graduate training. The A.M. degree is not a prerequisite to working toward the doctorate, but admission to candidacy is.

A doctoral candidate must show familiarity with all the fields of the discipline by successfully completing one course in each of four of the six areas. Competence must be demonstrated either in foreign languages, in quantitative methods and analysis, or in a combination of these as appropriate to the candidate's research interests. Requirements also include passing a written and oral preliminary examination after completion of 16 units. The preliminary examination tests competence in a major area of political science and in two minor areas, one of which may be outside the department. Although teaching is not a general Graduate College requirement, this department requires Ph.D. candidates to do some teaching as part of their academic work, such experience being considered a vital part of the graduate program. Further information on all these programs may be obtained by writing directly to the department.

Financial Aid. Approximately 50 percent of first-year graduate students and 90 percent of continuing students receive financial assistance from one of the following sources: Departmental and University Fellowships provide an eleven-month tax-free stipend plus a waiver of tuition and fees. (Approximately twenty-five fellowships are awarded each year.) Departmental teaching and research assistantships provide a nine-month salary of approximately $3,800 for a half-time appointment and $2,500 for a one-third-time appointment. All assistantships are supplemented by a waiver of tuition and service fees. (Approximately twenty-five appointments are made each year.)

POPULATION STUDIES

Correspondence and Information: Robert Schoen, Chairperson, Population Studies Committee, 326 Lincoln Hall, University of Illinois at Urbana-Champaign, Urbana, Illinois 61801

The study of the world's population, its size, rate of growth, and movement, is a major intellectual concern involving students and faculty from a wide range of academic departments of the University of Illinois at Urbana-Champaign. Communication and coordination among these various research and teaching interests are facilitated by the Population Studies Committee. In addition to the opportunities for graduate-level research and instruction which exist for students in graduate units as diverse as Agriculture, Life Sciences, Urban and Regional Planning, Com-

munications, History, and Business Administration, the Department of Sociology offers an interdisciplinary graduate program in population studies designed to train professional demographers for academic, government, and industrial positions. Faculty from the Departments of Economics and Geography, as well as Sociology, are involved in the program. Applicants seeking a formal specialization in demography should apply for admission to the graduate program in sociology, indicating their interest in population studies.

PSYCHOLOGY

Head of the Department: David Birch

Correspondence and Information: Graduate Admissions and Records Office, Department of Psychology, University of Illinois at Urbana-Champaign, 308 Psychology Building, 902 South Sixth Street, Champaign, Illinois 61820

FACULTY

Professors: J. A. Adams, R. C. Anderson, E. M. Banks, D. Bernstein, D. Birch, J. Campione, G. L. Clore, J. B. Cohen, L. Cohen, F. Costin, J. H. Davis, E. Donchin, D. E. Dulany, C. W. Eriksen, M. Fishbein, R. E. Flexman, L. R. Goulet, H. W. Hake, K. Hill, J. Hirsch, C. O. Hopkins, C. L. Hulin, L. G. Humphreys, J. McV. Hunt, F. Kanfer, W. E. Kappauf, S. Komorita, P. R. Laughlin, R. L. Linn, J. E. McGrath, O. H. Mowrer, C. E. Osgood, R. D. Parke, G. L. Paul, J. Rappaport, S. N. Roscoe, E. Satinoff, R. L. Sprague, R. Swarr, M. M. Tatsuoka, P. Teitelbaum, H. C. Triandis, L. R. Tucker, M. Wagman, M. Weir, R. Wyer

Associate Professors: M. Birnbaum, W. Brewer, A. Campione, S. Carter-Porges, M. Coles, C. Dweck, S. Golding, J. Gottman, G. Z. Greenberg, W. T. Greenough, L. E. Jones, R. P. Larsen, C. Lewis, J. Locke, J. W. Loeb, D. Medin, R. Nay, S. Porges, W. Redd, E. Seidman, D. T. Shannon, C. Trahiotis, R. Williges

Assistant Professors: G. Baxley, J. L. Cohen, E. Diener, R. Hendersen, G. Kleiman, J. Lamiell, J. Malpeli, C. Mervis, T. Moore, W. Schneider, E. Shoben, R. Terborg, C. Wickens

Graduate Degree Programs. The Department of Psychology offers graduate work leading to the degrees of Master of Arts, Master of Science, Doctor of Philosophy, and Doctor of Psychology.

Doctor of Philosophy programs are offered in the following areas of psychology: biological, developmental, clinical and counseling, experimental, industrial-organizational, personality and social ecology, quantitative, and social. The Master of Arts degree is awarded to students in the above programs as an intermediate degree. Master of Science programs are offered as terminal degrees in personnel psychology, engineering psychology, and quantitative psychology, and as an intermediate degree in the clinical psychology program leading to the Doctor of Psychology degree. The Doctor of Psychology degree is restricted to clinical psychology.

Admission. The Graduate College admissions requirements apply for all programs. The candidate for admission to a Master of Arts or Doctor of Philosophy program should ordinarily have the following preparation: a minimum of 15 hours in psychology, a laboratory course in experimental psychology and a course in statistics, a one-year course in another laboratory science, and high scores on the Graduate Record Examination. Preference is given to students who have taken mathematics beyond college algebra and to those who have some research experience.

The candidate for admission to a Master of Science program must ordinarily have completed an undergraduate major in an applied curriculum, such as those offered at the University of Illinois at Urbana-Champaign

Admission to the Doctor of Psychology program is based on a combination of

criteria, including adequacy of preparation in the behavioral sciences. excellence of undergraduate academic performance, scores on the Graduate Record Examination, and a history of involvement and successful performance in professionally relevant activities.

It is not possible to accept all applicants who meet the minimal requirements for any of the above programs because admissions to graduate study in psychology are limited in number.

Master of Arts. The Master of Arts degree is awarded as an intermediate degree to students who are candidates for the Doctor of Philosophy degree when they have completed satisfactorily 8 units of graduate work, including an acceptable thesis.

Master of Science. The Master of Science degree in personnel psychology, in engineering psychology, or in applied measurement is awarded as a terminal degree to candidates who have had an appropriate applied psychology undergraduate program, and who now complete satisfactorily 8 prescribed graduate units in their specialty.

The Master of Science degree in clinical psychology is awarded as an intermediate degree only to students who are candidates for the Doctor of Psychology degree when they have successfully completed at least 8 units of graduate study, including 4 units of practicum (Psychology 446) and supervised work with program faculty (Psychology 490) and have prepared an acceptable master's-level paper on an appropriate area of applied clinical practice.

Doctor of Philosophy. The Doctor of Philosophy degree is awarded to candidates who complete an approved program in their areas of specialization and meet department and Graduate College requirements for the degree. These must include: at least 24 graduate units; satisfactory performance in courses or on qualifying examinations in: quantitative methods, conceptual foundations of psychology, and in the areas of specialization; a master's thesis or equivalent; appropriate advanced courses and seminars in the area of specialization and in related and supporting areas; satisfactory performance on an oral preliminary examination; and completion of an acceptable Ph.D. dissertation and satisfactory performance on an oral examination in defense of the thesis.

Doctor of Psychology. The Doctor of Psychology is awarded in clinical psychology when the following requirements have been completed: three years of full-time course work consisting of 24-8 units, of which 20 units must be at the 400 level; practicum training in a minimum of five different clinical areas; a master's-level report; a preliminary examination administered by a committee appointed by the dean of the Graduate College; one year of internship following the third year of course work; a report on an approved topic relevant to clinical practice (not a dissertation); and a final examination administered by a committee appointed by the dean of the Graduate College.

Although teaching is not a general Graduate College requirement, this department requires Ph.D. and Psy.D. candidates to do some teaching as part of their academic work, such experience being considered a vital part of the graduate program.

RADIO AND TELEVISION

Acting Head of the Department: Theodore Peterson
Correspondence and Information: Department of Radio and Television, University of Illinois at Urbana-Champaign, 228 Gregory Hall, Urbana, Illinois 61801

The Department of Radio and Television has suspended admission to its program leading to the Master of Science degree while it reviews the curriculum and decides on its plans for future instruction in broadcasting. Students interested in earning a master's degree in radio and television may write the department head to learn the status of the department's plans. For the program leading to the Doctor of Philosophy in Communications, see page 76.

ROMANCE LINGUISTICS

Graduate Programs. A concentration in Romance linguistics is available to candidates for the Doctor of Philosophy in French, Linguistics, or Spanish. The curriculum is based upon appropriate course offerings in the three departments; further information may be obtained from the executive officers of those departments.

RUSSIAN LANGUAGE AND AREA STUDIES

Director of the Russian and East European Center: R. T. Fisher Jr.
Correspondence and Information: Director of the Russian and East European Center, University of Illinois at Urbana-Champaign, 1208 West California Avenue, Urbana, Illinois 61801

FACULTY

Professors: P. P. Bernard, W. C. Blaylock, C. L. Dawson, F. Dovring, J. D. Fellmann, R. T. Fisher Jr., M. Friedberg, J. Gorecki, F. M. Gottheil, K. A. Hitchins, D. R. Hodgman, K. A. Klein, P. B. Maggs, J. P. McKay, J. R. Millar, L. H. Miller, J. A. Nichols, T. Pachmuss, P. W. Schroeder, D. B. Shimkin, D. M. Shtohryn, L. Zgusta
Associate Professors: E. C. Bristol, R. Dunatov, F. Y. Gladney, S. P. Hill, H. H. Hock, R. E. Kanet, M. J. Kenstowicz, V. Mastny, D. L. Ransel, M. M. Shorish, B. P. Uroff
Assistant Professors: S. Curcic, T. H. Hoisington, E. McClure, R. D. Mills, N. Rzhevsky

Graduate Programs. Graduate programs in Russian language and area studies are offered by the Russian and East European Center in cooperation with various departments. The three programs listed below are designed to accompany work in a standard discipline such as anthropology or economics. Accordingly, it is the department of the student's primary discipline which receives and acts on the application for admission.

Minor for the Master's Degree. A candidate for the master's degree who elects Russian language and area studies as a minor must earn at least 2 units of graduate credit in courses devoted to Russia and chosen from the fields of anthropology, economics, geography, history, law, library science, literature, political science, and sociology.

Minor for the Doctor of Philosophy Degree. A doctoral candidate who elects Russian language and area studies as a minor must demonstrate a reading command of Russian as tested by examination or by completion of Russian 104 or 401 with a grade of A or B, and in addition must earn at least 4 units of graduate credit in the group of relevant courses defined above. The 4 units must include courses from at least two departments outside of, and may at the same time include up to 1 unit from within, the department offering the candidate's major.

Certificate of Graduate Specialization in Russian Language and Area Studies. This certificate is awarded by the Graduate College and the Russian and East European Center. It is for persons with the baccalaureate who are enrolled in advanced studies in any discipline and who wish at the same time to gain a knowledge of the Russian language and area. The requirements are as follows: (1) A good command of written and spoken Russian, as determined by special examinations. (2) At least 6 graduate units in course work relating to Russia, distributed among at least three of the departments represented in the program (Anthropology, Economics, Geography, History, Law, Library Science, Political Science, Slavic Languages and Literatures, and

Sociology) other than the student's own major department. If the student's major department is one of these nine, up to 1 unit from the major department may be counted as part of this requirement. (3) A special essay based largely on Russian sources which must meet, at the minimum, the standard normally required in a master's thesis. A copy of the student's master's thesis or doctoral dissertation may be submitted in fulfillment of this requirement.

SLAVIC LANGUAGES AND LITERATURES

(Including Czech, Old Church Slavonic, Polish, Russian, Serbo-Croatian, and Ukrainian)

Head of the Department: MAURICE FRIEDBERG
Correspondence and Information: Department of Slavic Languages and Literatures, University of Illinois at Urbana-Champaign, 2090 Foreign Languages Building, Urbana, Illinois 61801

FACULTY

Professors: C. L. DAWSON, M. FRIEDBERG, K. KLEIN, T. PACHMUSS
Associate Professors: E. BRISTOL, R. DUNATOV, F. Y. GLADNEY, S. P. HILL
Assistant Professors: T. HOISINGTON, N. RZHEVSKY

Graduate Degree Programs. The Department of Slavic Languages and Literatures offers graduate work leading to the degrees of Master of Arts in Russian, Master of Arts in the Teaching of Russian, and Doctor of Philosophy with specialization in Russian literature or Slavic linguistics.

Admission. Prospective graduate students of Slavic languages and literatures should have had the equivalent of at least three years of college Russian and some advanced course work in Russian literature. Some acquaintance with other languages and literatures is desirable. Students choosing Russian or other Slavic languages and literatures as a minor subject should consult the department. The Graduate College admissions requirements apply.

Master of Arts in Russian. In addition to fulfilling the requirements of the Graduate College, candidates must pass both a written and an oral examination in their major, and must pass the Russian proficiency examination. Students may major in literature or linguistics. Students majoring in literature must complete at least two courses in linguistics, while students majoring in linguistics must complete at least two courses in literature. No more than 1 unit of course work in the related field outside the department may be counted toward this degree. No master's thesis is required.

Master of Arts in the Teaching of Russian. All candidates for this degree are required to take: (1) Russian, 5 units, including at least 2 units from courses open only to graduate students; (2) education, 2 units, including 1 unit in educational psychology and 1 unit in educational policy studies; and (3) electives, 1 unit. These courses must be selected with the approval of the adviser. Candidates must pass an examination based on their course work and on a reading list. See page 84 for teacher certification requirements.

Doctor of Philosophy. All candidates for the Ph.D. must fulfill the general requirements of the Graduate College and must have a reading knowledge of two non-Slavic languages, French and German. A student may choose literature or linguistics as a major field. In addition to satisfying departmental language proficiency requirements, students must complete 8 units beyond the A.M., of which at least 5 are within the student's major field of study. The student must also complete a minor consisting of three graduate-level courses in a single field or two such courses each in two fields. Possible minor fields include Russian literature, Slavic linguistics, another Slavic language or literature, or an acceptable subject area outside the department. A student with a double minor may elect to be examined in only one minor. Students

majoring in Russian literature must complete two graduate-level courses in another Slavic language or literature in the original language. Students majoring in Slavic linguistics must complete a minimum of three graduate-level courses in two other Slavic languages or literatures in the original languages. A dissertation is required for the degree of Doctor of Philosophy.

Graduate courses are offered in the following Slavic languages: Czech, Old Church Slavonic, Polish, Russian, Serbo-Croatian, and Ukrainian.

Financial Aid. Several forms of financial assistance, including University Fellowships, National Defense Foreign Language (NDEA VI) Fellowships, teaching assistantships, research assistantships, and tuition and service fee waivers are available. There are also opportunities for part-time related work in the Special Languages Division of the Library and elsewhere on the campus. Virtually all superior students are assured of some form of financial assistance and also receive the opportunity to acquire some classroom teaching experience.

Research Interests. Major areas include East, West, and South Slavic linguistics, language teaching pedagogy, and computer-assisted language teaching. In literature, the fields of specialization include Russian literature of all periods, particularly of the nineteenth and twentieth centuries, Russian literature and society, émigré Russian literature, the Russian romantic and symbolist poets, Russo-Western literary and cultural contacts, and Russo-Jewish literary relations. Other major areas of interest represented include the Soviet and East European cinema, literary translation, Polish literature, Serbo-Croatian literature, and Slavic folklore.

The University of Illinois at Urbana-Champaign has one of the country's two or three best Slavic library collections. A National Endowment for the Humanities grant brings to the campus more than one hundred postdoctoral researchers from all over the country every year to take advantage of the outstanding Slavic library resources. The Library's unique Slavic reference service is in year-round operation, answering queries from libraries and individual scholars throughout the country.

SOCIAL SCIENCES

(Including Anthropology, Asian Studies, Geography, Latin American and Caribbean Studies, Political Science, and Sociology)

Director of the School of Social Sciences: Robert B. Crawford
Correspondence and Information: Director of the School of Social Sciences, University of Illinois at Urbana-Champaign, 210 Lincoln Hall, Urbana, Illinois 61801

The School of Social Sciences includes the Departments of Anthropology, Geography, Political Science, and Sociology and the Centers for Asian Studies and Latin American and Caribbean Studies. The school is responsible for facilitating interdisciplinary cooperation, not only among the academic units in the school, but across the campus generally; for development of interdepartmental research and instructional facilities such as the computer-based Social Science Quantitative Laboratory and the Spatial Data Analysis Laboratory; and for representing the social sciences to the public, and to public and private agencies outside the University. Programs leading to the graduate degrees of Master of Science, Master of Arts, Master of Arts in Public Administration, and Doctor of Philosophy are offered by various departments and centers in the school. These graduate degree programs are described in individual entries in this catalog for each field of study.

Support for graduate training is available in the form of tuition and service fee waivers, teaching and research assistantships, and fellowships. Prospective students may obtain application forms and information relevant to their interests from the executive officer of the appropriate department or center or from the director of the School of Social Sciences.

SOCIAL STUDIES

Correspondence and Information: J. R. Dahl, Director of the Program, Master of Arts in the Teaching of Social Studies, University of Illinois at Urbana-Champaign, 308 Gregory Hall, Urbana, Illinois 61801

Master of Arts in the Teaching of Social Studies. Candidates for admission should hold secondary school social studies teaching certificates. The Graduate College admissions requirements apply.

Graduate Degree Program. Eight units of graduate work are required. Four units are to be in the social studies (2 of these must be in history); 3 units in educational psychology, educational policy studies, and secondary and continuing education; and 1 unit in an elective chosen in consultation with the director of the program.

SOCIAL WORK

Director of the School of Social Work: Donald Brieland
Associate Director: Charles H. Henderson
Correspondence and Information: Director, School of Social Work, University of Illinois at Urbana-Champaign, 1207 West Oregon Street, Urbana, Illinois 61801

FACULTY

Professors: D. Brieland, L. B. Costin, F. H. Itzin, M. A. Taber
Associate Professors: R. A. Downing, K. H. Gould, C. H. Henderson, A. J. Katz, B.-L. C. Kim, P. L. Leuenberger, M. M. Monkman, A. J. Vattano, S. H. Wattenberg
Assistant Professors: J. R. Borkin, C. D. Cowger, M. L. Flynn, E. N. Gullerud, P. G. Hookey, G. L. Shaffer, N. Weinberg, P. A. Wilson

Graduate Degree Programs. The School of Social Work offers programs leading to the Master of Social Work and the Doctor of Social Work. The M.S.W. curriculum may be completed in sixteen months of continuous full-time study. A one-year program is available for students who hold the B.S.W. degree from an accredited institution. Students are encouraged to include electives from other departments. The D.S.W. curriculum requires two years of study beyond the master's degree. Field instruction is conducted through social agencies located in Urbana-Champaign, Decatur, Danville, Peoria, and Springfield, and by special arrangement in selected other communities. A 4.0 grade-point average (A = 5.0) is required of all students in order to receive the M.S.W. degree.

Admission. The applicant must meet the following minimum requirements: (1) Graduation from an accredited college or university with requirements for the bachelor's degree comparable to those of the University of Illinois. (2) An undergraduate grade-point average of at least 4.0 for the last 60 semester hours of completed work. (3) A supplementary statement submitted with the application for admission to the School of Social Work. This is a very important document in support of the application. The outline for this statement appears on the last page of the school's application form. (4) Evidence of personal qualifications suitable to the profession of social work. A minimum of 20 hours in social sciences courses and a course in statistics are recommended. Because applications for admission usually have far exceeded capacity in recent years, the grade-point averages of students admitted have been well above the minimum.

SOCIOLOGY

Head of the Department: Bernard Karsh
Director of Graduate Studies: Robert Schoen
Correspondence and Information: Department of Sociology, University of Illinois at Urbana-Champaign, 326 Lincoln Hall, Urbana, Illinois 61801

FACULTY

Professors: D. J. Bordua, N. Denzin, F. Fliegel, W. Form, J. Gorecki, N. Jacobs, H. M. Johnson, B. Karsh, K. Land, G. Lueschen, J. Robinson, R. J. Simon, S. Sudman
Associate Professors: H. Choldin, J. Huber, R. Jones, S. Kronus, C. McPhail, R. Schoen, A. Sofranko, M. Solaun, K. Southwood, J. Spaeth, J. van Es, N. Wiley
Assistant Professors: J. Brissy, W. Cockerham, L. Cohen, G. Dillingham, M. Felson, R. Kraus, J. O'Connor, J. Salloway, R. Stolzenberg, R. Vanneman, L. Waite

Graduate Degree Programs. The Department of Sociology offers graduate work leading to the Master of Arts and Doctor of Philosophy degrees.

Admission. The Graduate College admissions requirements apply. Students applying for admission should have a strong background in one of the social sciences, preferably sociology. Applicants must submit Graduate Record Examination scores on the tests of verbal ability, quantitative ability, and the advanced test in sociology.

Doctor of Philosophy. Considerable specialization around a core of sociological knowledge is encouraged to prepare students for careers in research and teaching at the college and university level, and for research careers in government and industry. Departmental programs include applied social statistics, population studies, cross-national comparative sociology, law and society, social psychology, medical sociology, and work and organizations. Candidates must be examined and certified as competent in sociological theory, statistics, research methods, two substantive areas, and one area of specialization. Additional information may be found in the "Sociology Handbook for Graduate Students," available from the department.

Master of Arts. The Master of Arts program is generally viewed as a first (and optional) step toward the doctorate. Admission requirements are indicated above. A candidate for the A.M. in sociology must earn 10 units of graduate credit, or seven units plus an acceptable master's thesis. The course work must include research methods and one advanced course in statistics.

SPANISH, ITALIAN, AND PORTUGUESE

(Including Catalan and Rumanian)

Chairperson of the Department: W. C. Blaylock
Correspondence and Information: Department of Spanish, Italian, and Portuguese, University of Illinois at Urbana-Champaign, 2090 Foreign Languages Building, Urbana, Illinois 61801

FACULTY

Professors: S. W. Baldwin, Jr., W. C. Blaylock, B. Dutton, M. H. Forster, R. E. Lott, A. M. Pasquariello, A. Porqueras-Mayo, R. A. Preto-Rodas, M. D. Saltarelli
Associate Professors: A. Aiex, A. Cassell, M. Francescato, T. C. Meehan, D. Wanner
Assistant Professors: A. Carreno, J. Lett, M. A. Lewis, A. Musumeci

Graduate Degree Programs. The Department of Spanish, Italian, and Portuguese offers work leading to the Master of Arts and Doctor of Philosophy in Spanish, in Italian, or in Portuguese, and to a Master of Arts in the Teaching of Spanish. Fields of concentration are Spanish linguistics, Romance linguistics, Spanish literature, Latin American literature, Italian linguistics, Italian literature, and Portuguese language and literature. Graduate courses in Catalan and Rumanian are available.

Admission. The Graduate College admissions requirements apply. Prerequisite for a graduate major is an undergraduate major in one Romance language or Latin, or consent of the department. Applicants living in the United States who intend to major in Spanish must submit Graduate Record Examination scores on the verbal and quantitative tests and on the advanced test in Spanish. Students doing graduate work for any advanced degree in Spanish must possess or acquire a practical command of the language. Parallel training in one or more other languages or literatures, such as English, French, German, Greek, or Latin, is desirable.

The programs in Spanish are described below. Individual programs will be developed for students who wish to major in Italian or Portuguese. For additional information consult the department.

Master of Arts. In addition to fulfilling the general requirements of the Graduate College, candidates must pass a comprehensive examination based on course work and on a general reading list. Three areas of specialization are offered: Spanish or Spanish American literature, Spanish linguistics, and the teaching of Spanish. Detailed statements of the course requirements for each specialization may be obtained from the department.

Doctor of Philosophy. Students working toward the Doctor of Philosophy degree are admitted with provisional departmental status until their performance in graduate work is judged acceptable for full departmental status by the department's graduate committee. A comprehensive written examination is used as a basis for this judgment. Candidates are required to present evidence of a reading knowledge of French and of one other language to be selected in consultation with the adviser, and candidates in Spanish are expected to take at least 2 units in seminar courses.

Six areas of specialization are available: medieval literature, Renaissance and Golden Age, Spanish literature of the nineteenth and twentieth centuries, Latin American literature, Spanish linguistics, and Romance linguistics. For the specialization in Spanish linguistics, general linguistics is a required minor; the department should be consulted on the selection of minors for the other specializations.

SPEECH AND HEARING SCIENCE

Head of the Department: JOHN J. O'NEILL

Correspondence and Information: John J. O'Neill, Department of Speech and Hearing Science, University of Illinois at Urbana-Champaign, 901 South Sixth Street, Champaign, Illinois 61820

FACULTY

Professors: R. BILGER, J. J. O'NEILL, S. P. QUIGLEY, E. W. STARK, W. R. ZEMLIN

Associate Professors: F. L. JOHNSON, M. E. JOSEPH, J. L. LOCKE, M. A. O'NEILL, E. P. PADEN, L. J. SANDERS, R. K. SIMPSON, E. YAIRI

Assistant Professors: P. B. ARLT, J. COLTON, J. G. ERICKSON, B. W. HODSON, S. J. PETERSON

Graduate Degree Programs. The department offers courses leading to the Master of Arts, Master of Science, and Doctor of Philosophy degrees, with specialization in speech and hearing science and in education of the hearing impaired.

Admission. Admission to the program in education of the hearing impaired requires

the completion of a baccalaureate or an equivalent degree comparable to that granted by the University of Illinois. For all other areas, admission requires satisfactory completion of a four-year curriculum preparatory to speech and hearing science, speech pathology, or audiology, or 16 hours of undergraduate credit in the following areas or their equivalents: speech pathology, audiology, phonetics, and anatomy and physiology of the vocal mechanism, or speech science and/or voice science.

Master's Degrees in Speech and Hearing Science. Two types of master's degrees are offered: the Master of Science and the Master of Arts. The incoming students in both of these programs take an examination covering audiology, speech and hearing science. and speech pathology. The examination serves two purposes: to assess the student's general knowledge of the basic aspects of these areas (qualifying), and to evaluate specific strengths and weaknesses in the student's major area of study (evaluative). The results of these examinations are used to help students plan their graduate programs. As a part of the requirements for either degree, the student must pass the qualifying examination in his or her nonmajor areas sometime during his or her course of study.

Master of Science. The program leading to the degree of Master of Science is usually considered to be a terminal program for the purpose of training competent clinicians who intend to seek employment in the school environment. It is designed to provide comprehensive knowledge of the various types of speech, hearing, and language disorders; their causes; and the principles of diagnostic and therapeutic management. This program requires a minimum of 8 units: 4 units from a group of courses appropriate to the areas of speech pathology, audiology, or language; 2 units from selected courses in education; and 2 units of electives.

Master of Science in Education of the Hearing Impaired. This program is focused on preparing elementary-level teachers of the hearing impaired. A minimum of 8 units of course work (at least 3 of which are to be at the 400 level), Educational Policy Studies 304 and 305, and Educational Psychology 311 and 312 are required.

Master of Arts. The Master of Arts may be taken as either a terminal degree or as preparation for further graduate study with concentration in audiology, language, speech and hearing science, speech pathology, or hearing impaired. It is recommended for those students who plan to continue their education in a doctoral program, as well as for those students who plan to terminate their formal education with the Master of Arts. As a terminal degree it is designed to ensure clinical competence. As a nonterminal degree it permits the student to take the basic professional courses which then become an integral part of the student's entire graduate program. Students may take all 8 units within the four specialized areas or may elect a minor outside the department. The only course which is required of all candidates is Speech and Hearing Science 399, Design and Analysis of Experiments in Speech and Hearing Science, or its equivalent. A thesis can be a part of the A.M. program, depending upon the candidate's educational and professional goals.

Doctor of Philosophy. The Ph.D. program provides intensive training in speech and hearing processes and disorders. The program may be planned with specialization in any one of the four areas: audiology, language, speech and hearing science, or speech pathology. The minimum academic requirement for this degree is 16 units beyond the master's degree and a dissertation. If there are deficiencies in the student's background, additional courses will be required, and courses taken for this purpose are usually not counted toward the minimum requirement. In addition, if the candidate did not write a thesis as part of his or her master's program, he or she will be required to demonstrate research competence during the initial semester of study. Individual study programs tailored to the special needs of the student are planned by the student and his or her adviser. The only courses which are required are Speech and Hearing Science 475, Experimental Phonetics I, and 476, Experimental Phonetics II.

SPEECH COMMUNICATION

Head of the Department: Roger Nebergall
Director of Graduate Study: Kenneth Andersen
Correspondence and Information: Director of Graduate Study, Department of Speech Communication, University of Illinois at Urbana-Champaign, 244 Lincoln Hall, Urbana, Illinois 61801

FACULTY

Professors: K. E. Andersen, J. J. Bateman, K. W. Broadrick-Allen, H. L. Mueller, R. E. Nebergall, M. H. Nichols (emerita)
Associate Professors: J. C. Ahart, R. A. Clark, J. G. Delia, J. H. Maclay, E. P. Paden, S. H. Thomas, J. W. Wenzel
Assistant Professors: D. Bartine, L. Grossberg, C. R. Kramer, J. H. Patton, E. M. Ritter, K. W. Ritter, D. R. Seibold, D. L. Swanson
Lecturer: E. C. Fine

Graduate Degree Programs. The Department of Speech Communication offers courses leading to the Master of Arts and Doctor of Philosophy and the Master of Arts in the Teaching of Speech Communication degrees.

Admission. In addition to the Graduate College requirements, the academic aptitude portion of the Graduate Record Examination is required in all curricula.

Master of Arts. For the degree of Master of Arts, students may concentrate in rhetorical and communication theory or in interpretation. A special curriculum in the teaching of speech leads to the Master of Arts in the Teaching of Speech Communication. The entering student should present the equivalent of 16 hours of undergraduate work in speech, communications, or interpretation. In addition to meeting general requirements of the Graduate College, a final written examination is required of all candidates. In some cases an oral examination is also stipulated. A thesis is optional, and may constitute a maximum of 2 units of credit. Students wishing to concentrate in theatre should apply to the Department of Theatre.

Master of Arts in the Teaching of Speech Communication. Candidates must first be admitted to a degree program in rhetorical and communication theory or interpretation. Degree requirements can be met by summer attendance. In meeting Graduate College requirements and departmental requirements, including the comprehensive examination, M.A.T. candidates must complete 6 units of work in the department plus the units of required work in education (see page 84).

Doctor of Philosophy. For the Doctor of Philosophy degree, students may concentrate in one of three options: rhetoric and communication theory, theatre, and interpretation. Students are accepted as candidates for the Ph.D. who present either a well-rounded undergraduate education with an emphasis in speech and a master's in a cognate discipline or who hold a master's degree in speech or theatre from an accredited institution. Students wishing to concentrate in theatre should contact the Department of Theatre for information on this option.

In addition to meeting general requirements of the Graduate College, the student must satisfactorily complete written and oral preliminary examinations, an oral defense of the dissertation prospectus, and an oral defense of the dissertation. Students must demonstrate competency in research procedures and tools which may include proficiency in one or more foreign language, or various research methodologies and tools, or cognate academic work.

Specific information on programs of graduate study and financial aid is supplied to all who request it. Financial aid is usually in the form of part-time teaching assistantships.

THEATRE

Head of the Department: BURNET M. HOBGOOD
Correspondence and Information: Head, Department of Theatre, University of Illinois at Urbana-Champaign, 4-122 Krannert Center for the Performing Arts, 500 South Goodwin Avenue, Urbana, Illinois 61801

FACULTY

Professors: C. M. BEHRINGER, B. M. HOBGOOD, C. H. SHATTUCK, B. R. WORKS
Associate Professors: J. C. AHART, P. J. BRADY, D. KNIGHT, D. A. LLEWELLYN, S. MURRAY, R. TYMCHYSHYN
Assistant Professors: M. C. HARDY, R. GRAVES

Graduate Degree Programs. The Department of Theatre offers graduate work leading to the Master of Arts, to the Master of Fine Arts in Theatre, and, in cooperation with the Department of Speech Communication, the Doctor of Philosophy in Speech with a theatre option.

Admission. Applicants will be considered who have either an undergraduate major in theatre, which includes at least 9 hours in dramatic literature (as part of, or in addition to, the major), or any undergraduate major which includes at least 9 hours of basic courses in theatre (acting, directing, production) and 7 hours in speech or dramatic literature. An audition and/or interview, with submission of portfolio in nonperformance areas, is required for admission to the program leading to the degree of Master of Fine Arts in Theatre. Applicants will be considered for admission to the program leading to the degree of Doctor of Philosophy in Speech with a theatre option who have at least a 4.0 grade-point average (A = 5.0) in the last 60 hours of undergraduate work plus any graduate work, and a Master of Arts or Master of Fine Arts in Theatre, or the equivalent.

Master of Arts. A candidate for the A.M. must spend at least two semesters in residence; must complete at least 8 units of course work in theatre and related studies, including at least 2 units in history and theory of theatre and 2 in applied theatre; and must pass a final comprehensive examination. A full-time student can complete this program in one academic year.

Master of Fine Arts. The M.F.A. is a terminal program in the areas of theatre practice. The candidate for this degree must spend at least four semesters in residence and must complete at least 14 units of course work, 6 in studio or colloquium courses, 3 in electives, and 2 in a creative project which will be the culmination of the graduate work. A diagnostic examination will determine history and theory requirements for each candidate. Only full-time students will be admitted to the program; they should complete it in two academic years.

Doctor of Philosophy. Requirements for the degree are a minimum of 8 units in courses in theatre and related studies beyond the master's degree; a reading knowledge of two foreign languages, or of one foreign language and one of the prescribed substitutes; a minimum of 8 units of dissertation research; a comprehensive oral and written examination; and defense of the dissertation before a committee of the graduate faculty. The program requires two to three years beyond the master's degree to complete.

THEORETICAL AND APPLIED MECHANICS

Head of the Department: RICHARD T. SHIELD
Graduate Program Coordinator: JOHN S. WALKER
Correspondence and Information: Graduate Program Coordinator, Department of Theoretical and Applied Mechanics, University of Illinois at Urbana-Champaign, 216 Talbot Laboratory, Urbana, Illinois 61801

FACULTY

Professors: A. P. Boresi, D. E. Carlson, M. E. Clark, H. T. Corten, G. A. Costello, D. C. Drucker, R. A. Eubanks, C. E. Kesler, T. J. Lardner, F. A. Leckie, R. E. Miller, J. Morrow, J. M. Robertson, R. T. Shield, O. M. Sidebottom, G. M. Sinclair, M. C. Stippes, C. E. Taylor, H. R. Wetenkamp, W. J. Worley
Associate Professors: R. J. Adrian, J. D. Buckmaster, J. W. Phillips, J. S. Walker
Assistant Professors: E. C. Aifantis, S. S. Wang

Graduate Degree Programs. The graduate programs in the Department of Theoretical and Applied Mechanics lead to the Master of Science and Doctor of Philosophy degrees. Major areas of study and research are applied mathematics, dynamics and vibrations, fluid mechanics, materials engineering, and solid mechanics.

Admission. Applicants should have the bachelor's or master's degree in engineering, mathematics, physics, or related fields and meet the Graduate College requirements for admission.

Master of Science. Candidates are required to complete a minimum of 8 units of graduate work including a thesis (ordinarily 2 units) and to maintain a minimum grade-point average of 3.75 (A = 5.0). Students are required to register for the seminar in engineering mechanics. If a student elects not to present a thesis, 9 units of course work are required. A full-time student can normally complete this program in one academic year of study. A student who has an assistantship can normally complete the requirements in one calendar year.

Doctor of Philosophy. Candidates for the Doctor of Philosophy degree are required to complete 8 units of course work beyond the master's degree with a minimum grade-point average of 4.0, including at least ½ unit from each of the following major areas in the department: applied mathematics, dynamics and vibrations, fluid mechanics, materials engineering, and solid mechanics. Students are required to register for the seminar in engineering mechanics. A student must pass an oral preliminary examination before commencing the dissertation. The thesis research normally comprises about half the work beyond the master's degree. A student can normally complete the Ph.D. program in two years of study beyond the master's degree.

Financial Aid. Half-time teaching and research assistantships allow students to take three-quarters of a full schedule of graduate courses. For 1977-78, the half-time stipend for beginning students is $4,100 for the nine-month academic year plus exemption from tuition and service fees. Advanced students receive up to $4,800. Assistantship applications can be made at any time before the semester of entrance. Some University Fellowships are also available.

Research Interests. Some of the areas of theoretical and experimental research currently being investigated by graduate students and faculty are: fracture control, crack propagation, metal fatigue, fiber-reinforced materials, cycle-dependent deformations, plasticity of composites, creep of metals and composites, elasticity, finite elastic deformations, structural optimization, thermoelasticity, elastic stability, evaluation of plasticity theories, finite element methods, holographic interferometry, dynamic photoelasticity, numerical stress analysis, flow of viscous fluids, blood flow in arteries, biomechanics, turbulent boundary-layer theory, magnetohydrodynamics, non-Newtonian fluid flow, atmospheric turbulence, dynamics of springs and cables, elastic wave propagation, vibrations of shells, vibration isolation, and combustion.

URBAN AND REGIONAL PLANNING

Head of the Department: Michael P. Brooks
Correspondence and Information: Head of the Department of Urban and Regional Planning, University of Illinois at Urbana-Champaign, 1003 West Nevada Street, Urbana, Illinois 61801

FACULTY

Professors: L. F. Blair, D. E. Boyce, M. P. Brooks, C. W. Forrest, E. C. Freund, W. I. Goodman, A. Z. Guttenberg
Associate Professors: A. M. Isserman, C. V. Patton, J. A. Quinn
Assistant Professors: B. N. Checkoway, L. F. Heumann, T. J. Kim, M. C. Romanos

Graduate Degree Programs. The Department of Urban and Regional Planning offers graduate work leading to the degree of Master of Urban Planning.

Admission. While the social sciences, the design professions, civil engineering, and urban planning are relevant undergraduate backgrounds for graduate work in planning, consideration will also be given to students prepared in the humanities, the physical sciences, and other fields. The Graduate College admissions requirements apply.

Master of Urban Planning. The master's degree program is designed to prepare students for careers in professional planning practice. Such careers can involve service in public agencies at any of the levels of government, in private consulting practice, or in other organizations in need of planning services. Alternatively, the program may prepare students for advanced work leading to the Ph.D. degree and a career in teaching, research, or both. The program combines a set of minimum requirements with a high degree of flexibility and choice. The course of study ordinarily requires two years. First-year students typically take courses focusing on the basic elements of planning, including studies in planning theory, analytical methods, planning procedure, and administration. The second year provides opportunities for further work in areas of specialized interest.

A thesis or a master's project (comparable to the thesis in scope but more flexible in the types of projects which can be carried out) is required. To qualify for the degree, a student must complete a minimum of either (1) 12 units, if a zero-credit internship course (Urban Planning 340 or 440) is successfully completed; or (2) 13½ units, if one of the internship courses is not elected. (The internship must be preceded and succeeded by at least one semester of course work in residence on the University of Illinois at Urbana-Champaign campus.) At least 8 units must be in urban and regional planning courses (6½ units for students completing Urban Planning 340 and 440). At least 3 units must be at the 400 level, and 2 of these must be in urban and regional planning.

Financial Aid. A limited number of fellowships, tuition and service fee waivers, teaching assistantships, and research assistantships is available each year. Financial aid is awarded on the basis of the student's previous academic record and other indicators of potential. In the case of assistantships, the possession of specific teaching or research capabilities, and financial need are considerations. First priority for assistantships is generally given to second-year graduate students.

VETERINARY MEDICAL SCIENCE

Head of the Department: Richard E. Dierks
Acting Assistant Head: Lyle E. Hanson
Correspondence and Information: Department of Veterinary Medical Science, University of Illinois at Urbana-Champaign, 157 Veterinary Medicine Building, Urbana, Illinois 61801

FACULTY

Professors: R. E. Dierks, P. R. Fitzgerald, L. E. Hanson, L. C. Helper, G. L. Jackson, N. D. Levine, R. C. Meyer, W. L. Myers, M. Ristic, A. H. Safanie, A. G. Schiller, D. Segre, J. Simon, E. Small, J. C. Thurmon, K. S. Todd, Jr., A. R. Twardock, A. M. Watrach, G. T. Woods
Associate Professors: R. F. Bevill, L. G. Hansen, H. A. Reynolds, H. E. Rhoades, W. A. F. Tompkins

Graduate Degree Programs. The Department of Veterinary Medical Science offers graduate work leading to the degrees of Master of Science and Doctor of Philosophy.

Admission. The applicant's undergraduate program should include at least 5 semester hours of physics or mathematics, 14 hours of chemistry, and 15 hours of biological sciences. A student who is deficient in these subjects may be accepted but must remove the deficiency during the first year of residence. Qualifications of students must be approved by the department's Committee on Admission of Graduate Students.

Program Description. Areas of specialization in Veterinary Medical Science are: anatomy, clinical sciences, immunology, microbiology, parasitology, pathology, pharmacology, and physiology.

Master of Science. The requirements for the degree are: (1) 8 units of course work, of which 4 must be in Veterinary Medical Science; 3 units of the course work must be at the 300 level, with at least 2 of these in Veterinary Medical Science; (2) ¼ unit of Veterinary Medical Science seminar credit; (3) thesis on original research; (4) final comprehensive examination.

Doctor of Philosophy. The requirements for the degree are: (1) 24 units of course work, 12 of which, including thesis research, must be in Veterinary Medical Science and 6 of which must be in other departments; (2) ½ unit of Veterinary Medical Science seminar credit; (3) the course Veterinary Medical Science 340, Applied Statistics, or Biology 371, Quantitative Biology; (4) reading proficiency in either French, German, Russian, or Spanish (other languages may be approved by the department); (5) passage of the preliminary examination; (6) a thesis on original research; (7) passage of the final examination.

Financial Aid. Limited numbers of research and teaching assistantships are available in departments of the College of Veterinary Medicine.

Where to Write

ADMISSION

Graduate and Foreign Admissions
University of Illinois at Urbana-Champaign
312 Metallurgy and Mining Building
Urbana, Illinois 61801
or
The Graduate College
University of Illinois at Urbana-Champaign
330 Administration Building
Urbana, Illinois 61801

EMPLOYMENT (Hourly)

Director, Student Employment
University of Illinois at Urbana-Champaign
420 Student Services Building
Champaign, Illinois 61820

EXTRAMURAL CLASSES

Office of Continuing Education and Public Service
University of Illinois at Urbana-Champaign
101 Illini Hall, 725 South Wright Street
Champaign, Illinois 61820

FELLOWSHIPS, ASSISTANTSHIPS, OTHER FINANCIAL AID

The prospective department

FOREIGN STUDENTS (Passport, Visa Assistance)

Director, Office of International Student-Staff Affairs
University of Illinois at Urbana-Champaign
300 Student Services Building
Champaign, Illinois 61820

HOUSING

Director, Housing Division
University of Illinois at Urbana-Champaign
200 Clark Hall, 1215 South Fourth Street
Champaign, Illinois 61820

MOTOR VEHICLE AND BICYCLE REGISTRATION

Motor Vehicle Registration Office
University of Illinois at Urbana-Champaign
601 East John Street
Champaign, Illinois 61820

SERVICES FOR PERMANENTLY PHYSICALLY HANDICAPPED STUDENTS

Division of Rehabilitation-Education Services
University of Illinois at Urbana-Champaign
Rehabilitation-Education Center, 1100 South Oak Street
Champaign, Illinois 61820

VETERANS

Veterans Educational Benefits
University of Illinois at Urbana-Champaign
130 Student Services Building
Champaign, Illinois 61820

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